

**LYMPH NODE METASTASIS
IN ORAL CANCER**

Thesis submitted in accordance with
the requirements of the University of Liverpool
for the degree of Doctor in Philosophy

by

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and BIBLIOGRAPHY.

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Section 1.

TABLES.

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Table 4.1

CLINICAL FEATURES, METASTATIC STATUS AND TYPE OF NECK DISSECTION IN UNILATERAL PROCEDURE PATIENTS.

ND No.	Sex	Age	Site	Stage	Metastatic Status		Extent of Dissection ^a
					Clinical	Histo-logical	
56	F	69	Buccal Mucosa	T1	Negative	Negative	Functional
2	F	67	Buccal Mucosa	T2	Negative	Positive	Radical
5	M	62	Buccal Mucosa	T2	Negative	Positive	SOH
99	F	33	Buccal Mucosa	T2	Negative	Negative	Functional
55	M	49	Buccal Mucosa	T4	Positive	Negative	Functional
125	F	43	Buccal Mucosa	T4	Positive	Positive	Functional
86	F	64	Lower Alveolar Ridge	T1	Negative	Negative	Functional
46	F	68	Lower Alveolar Ridge	T3	Negative	Negative	Functional
65	F	81	Lower Alveolar Ridge	T4	Negative	Negative	SOH
90	F	72	Lower Alveolar Ridge	T4	Positive	Negative	Functional
98	M	50	Lower Alveolar Ridge	T4	Positive	Negative	Radical
131	F	75	Lower Alveolar Ridge	T4	Negative	Negative	Functional
128	M	79	Retromolar Trigone	T1	Negative	Negative	SOH
10	M	69	Retromolar Trigone	T3	Negative	Negative	Functional
9	M	61	Oral Tongue	T1	Positive	Positive	Radical
22	F	55	Oral Tongue	T1	Negative	Negative	SOH
47	M	46	Oral Tongue	T1	Negative	Negative	Functional
85	M	45	Oral Tongue	T1	Negative	Negative	SOH
122	M	72	Oral Tongue	T1	Positive	Positive	Functional
13	F	67	Oral Tongue	T2	Negative	Negative	Radical
16	M	50	Oral Tongue	T2	Positive	Negative	Radical
18	M	46	Oral Tongue	T2	Positive	Negative	Radical
31	M	65	Oral Tongue	T2	Positive	Positive	Radical
41	F	64	Oral Tongue	T2	Positive	Negative	Functional
120	M	66	Oral Tongue	T2	Negative	Positive	Functional
129	M	63	Oral Tongue	T2	Negative	Positive	Functional
144	M	81	Oral Tongue	T2	Negative	Positive	SOH
39	F	68	Oral Tongue	T3	Positive	Positive	Radical
52	M	67	Oral Tongue	T3	Negative	Positive	Functional
134	M	37	Oral Tongue	T3	Positive	Negative	Functional
110	F	65	Oral Tongue	T4	Positive	Positive	Radical
132	M	75	Floor of Mouth	T1	Positive	Negative	SOH
111	F	77	Floor of Mouth	T2	Negative	Positive	Functional
135	M	71	Floor of Mouth	T2	Positive	Positive	Functional
51	M	72	Floor of Mouth	T4	Negative	Positive	SOH
96	F	63	Floor of Mouth	T4	Positive	Positive	Radical
109	M	53	Floor of Mouth	T4	Negative	Positive	Functional
116	F	61	Oropharynx	T1	Positive	Negative	SOH
124	M	49	Oropharynx	T2	Negative	Negative	Functional
108	M	51	Oropharynx	T4	Positive	Positive	Radical

^a SOH = Supra-omohyoid.

Table 4.2

THE SITE AND STAGE OF THE PRIMARY TUMOUR IN THE SIMULTANEOUS UNILATERAL PROCEDURE PATIENTS^a.

Site of Primary	Stage of Primary				All T Stages
	T1	T2	T3	T4	
Buccal Mucosa	1(0)	3(2)	0(0)	2(1)	6(3)
Lower Alveolar Ridge	1(0)	0(0)	1(0)	4(0)	6(0)
Retromolar Trigone	1(0)	0(0)	1(0)	0(0)	2(0)
Oral Tongue	5(2)	8(4)	3(2)	1(1)	17(9)
Floor of Mouth	1(0)	2(2)	0(0)	3(3)	6(5)
Oropharynx	1(0)	1(0)	0(0)	1(1)	3(1)
All Sites	10(2)	14(8)	5(2)	11(6)	40(18)

^a The number of patients with histologically diagnosed nodal metastasis is shown in brackets.

Table 4.3

CLINICAL FEATURES, METASTATIC STATUS AND TYPE OF NECK DISSECTION IN BILATERAL PROCEDURE PATIENTS.

ND No.	Sex	Age	Site	Stage	Metastatic Status		Extent of Dissection ^a
					Clinical	Histo-logical	
104	M	74	Lower Alveolar Ridge	T4	Negative	Negative	Functional
105					Negative	Negative	Functional
63	M	64	Oral Tongue	T2	Negative	Negative	SOH
64					Positive	Positive	Functional
112	F	61	Oral Tongue	T2	Positive	Positive	Functional
113					Negative	Negative	SOH
152	M	60	Oral Tongue	T2	Negative	Positive	Functional
153					Negative	Negative	Functional
92	F	79	Oral Tongue	T3	Negative	Negative	SOH
93					Positive	Negative	Radical
83	M	51	Floor of Mouth	T1	Negative	Negative	SOH
84					Positive	Positive	Functional
106	F	63	Floor of Mouth	T1	Negative	Positive	SOH
107					Negative	Positive	SOH
117	M	43	Floor of Mouth	T1	Negative	Negative	SOH
118					Positive	Positive	Functional
138	F	57	Floor of Mouth	T1	Negative	Negative	SOH
139					Negative	Negative	SOH
154	F	58	Floor of Mouth	T1	Negative	Negative	SOH
155					Negative	Negative	SOH
42	M	63	Floor of Mouth	T2	Positive	Negative	Functional
43					Negative	Negative	SOH
75	M	64	Floor of Mouth	T2	Negative	Negative	Functional
76					Negative	Negative	Functional
114	F	63	Floor of Mouth	T2	Positive	Positive	Radical
115					Negative	Positive	SOH
136	M	56	Floor of Mouth	T2	Negative	Positive	Functional
137					Negative	Negative	SOH
58	M	65	Floor of Mouth	T4	Positive	Negative	Functional
59					Positive	Negative	Functional
72	M	46	Floor of Mouth	T4	Positive	Positive	Radical
73					Negative	Negative	Functional
94	M	68	Floor of Mouth	T4	Positive	Positive	Radical
95					Negative	Negative	SOH
141	M	63	Oropharynx	T1	Positive	Positive	Radical
142					Positive	Positive	Functional
158	M	43	Oropharynx	T3	Positive	Positive	Radical
159					Negative	Negative	Functional
156	M	50	Oropharynx	T4	Negative	Negative	SOH
157					Positive	Positive	Functional

^a SOH = Supra-omohyoid.

Table 4.4

THE SITE AND STAGE OF THE PRIMARY TUMOUR IN THE SIMULTANEOUS BILATERAL PROCEDURE PATIENTS^a.

Site of Primary	Stage of Primary				All T Stages
	T1	T2	T3	T4	
Lower Alveolar Ridge	0(0)	0(0)	0(0)	1(0)	1(0)
Oral Tongue	0(0)	3(3)	1(0)	0(0)	4(3)
Floor of Mouth	5(3)	4(2)	0(0)	3(2)	12(7)
Oropharynx	1(1)	0(0)	1(1)	1(1)	3(3)
All Sites	6(4)	7(5)	2(1)	5(3)	20(13)

^a The number of patients with histologically diagnosed nodal metastasis is shown in brackets.

Table 4.5

THE SITE AND STAGE OF THE PRIMARY TUMOUR IN THE SIMULTANEOUS PROCEDURE PATIENTS^a.

Site of Primary	Stage of Primary				All T Stages
	T1	T2	T3	T4	
Buccal Mucosa	1(0)	3(2)	0(0)	2(1)	6(3)
Lower Alveolar Ridge	1(0)	0(0)	1(0)	5(0)	7(0)
Retromolar Trigone	1(0)	0(0)	1(0)	0(0)	2(0)
Oral Tongue	5(2)	11(7)	4(2)	1(1)	21(12)
Floor of Mouth	6(3)	6(4)	0(0)	6(5)	18(12)
Oropharynx	2(1)	1(0)	1(1)	2(2)	6(4)
All Sites	16(6)	21(13)	7(3)	16(9)	60(31)

^a The number of patients with histologically diagnosed nodal metastasis is shown in brackets.

Table 4.6

PATHOLOGICAL FINDINGS IN SERIES I PATIENTS.

	Unilateral Procedures (40)	Bilateral Procedures (40)	Simultaneous Procedures (60)
With No Evidence of Metastasis	22(55%)	7(35%)	29(48%)
With Metastasis	18(45%)	13(65%)	31(52%)
-with discrete nodes only	14	9	23
-with fused nodal masses	4	4	8
Positive Patients with ECS ^a	11(61%)	11(85%)	22(71%)
-with macroscopic ECS	6	7	13
-with microscopic ECS	5	4	9

^a ECS = Extracapsular spread.

Table 4.7

PATHOLOGICAL FINDINGS IN EIGHTY SIDES OF NECK DISSECTION (SERIES I).

	Unilateral Dissections	Bilateral Dissections	Simultaneous Dissections
Sides of Neck Dissection	40	40	80
With No Evidence of Metastasis	22(55%)	24(60%)	46(58%)
With Metastasis	18(45%)	16(40%)	34(43%)
-with discrete nodes only	14	11	25
-with fused nodal masses	4	5	9
-with ECS ^a	11	13	24
-with macroscopic ECS	6	8	14
-with microscopic ECS	5	4	9
-with permeation of perinodal lymphatics only	0	1	1
-percentage of positive dissections with ECS	61%	81%	71%
Number of Metastatic Deposits	54	26	80
-fused nodal masses	10	6	16
-discrete positive nodes	44	20	64
-with no ECS	24	8	32(50%)
-with permeation of perinodal lymphatics only	1	2	3(5%)
-with microscopic ECS	11	6	17(27%)
-with macroscopic ECS	8	4	12(19%)

^a ECS = Extracapsular spread.

Table 4.8

SIZE AND DISTRIBUTION OF METASTATIC LYMPH NODES AND FUSED NODAL MASSES IN THIRTY-FOUR SIDES OF NECK DISSECTION.

Size (cm.) of Node/Mass	Yield of Metastatic Deposits ^a at Anatomical Level					
	I	II	III	IV	V	All Levels
Less than 0.5cm.	1	0	0	0	2	3
0.5-0.9cm.	9	2	1	2	3	17
1.0-1.4cm.	6	4	5	2	2	19
1.5-1.9cm.	3	2	1	1	0	7
2.0-2.4cm.	4	7(2)	0	2	0	13(2)
2.5-2.9cm.	1	5(3)	1	0	0	7(3)
3.0-3.4cm.	0	5(2)	1(1)	2(2)	0	8(5)
3.5-3.9cm.	0	0	0	1(1)	0	1(1)
More than 3.9cm.	2(2)	3(3)	0	0	0	5(5)
All Sizes	26(2)	28(10)	9(1)	10(3)	7	80(16)

^a The total number of metastatic deposits (discrete and/or fused nodes) is shown. The number of fused nodal masses is shown in brackets. Fused nodal masses involving several anatomical levels are assigned to the first (lowest numerical) level of involvement.

Table 4.9

DISTRIBUTION OF CERVICAL METASTATIC DEPOSITS ACCORDING TO THEIR ANATOMICAL LEVEL.

Anatomical Level	Number of Discrete Positive Nodes	Number of Fused Nodal Masses ^a	Total Number of Metastatic Deposits	Percentage of All Metastatic Deposits
Level I	24	2	26	33%
Level II	18	10	28	35%
Level III	8	1	9	11%
Level IV	7	3	10	13%
Level V	7	0	7	9%
All Levels	64	16	80	100%

^a Fused nodal masses involving several anatomical levels are assigned to the first (lowest numerical) level of involvement.

Table 4.10

SIZE AND DISTRIBUTION OF LYMPH NODES IN EIGHTY SIDES OF NECK DISSECTION.

Nodal Size	Yield of Nodes at Anatomical Level ^a					
	I	II	III	IV	V	All Levels
< 0.5cm.	28(1)	122(0)	57(0)	68(0)	277(2)	552 (3)
0.5-0.9cm.	173(9)	239(2)	158(1)	186(2)	226(3)	982(17)
1.0-1.4cm.	97(6)	126(4)	99(5)	82(2)	42(2)	446(19)
1.5-1.9cm.	34(3)	71(2)	40(1)	29(1)	8(0)	182 (7)
2.0-2.4cm.	13(4)	31(5)	11(0)	11(2)	0(0)	66(11)
2.5-2.9cm.	1(1)	13(2)	2(1)	2(0)	0(0)	18 (4)
3.0-3.4cm.	0(0)	10(3)	0(0)	0(0)	0(0)	10 (3)
3.5-3.9cm.	0(0)	1(0)	0(0)	0(0)	0(0)	1 (0)
> 3.9cm.	0(0)	1(0)	0(0)	0(0)	0(0)	1 (0)
All Sizes	346(24)	614(18)	367(8)	378(7)	553(7)	2258(64)

^a The number of discrete nodes containing metastatic carcinoma is shown in brackets.

Table 4.11

FREQUENCY OF HISTOLOGICAL METASTASIS IN RELATION TO LYMPH NODE SIZE^a.

Size of Lymph Node (cm.)	Number of Nodes	Number of Metastatic Nodes	Relative %age of Metastatic Nodes
All Sizes	2,258	64	2.8%
- or > 0.5cm.	1,706	61	3.6%
- or > 1.0cm.	724	44	6.1%
- or > 1.5cm.	278	25	9.0%
- or > 2.0cm.	96	18	18.8%
- or > 2.5cm.	30	7	23.3%
- or > 3.0cm.	12	3	25.0%
- or > 3.5cm.	2	0	0.0%
- or > 4.0cm.	1	0	0.0%

^a Only discrete lymph nodes are considered.

Table 4.12

RELATIONSHIP BETWEEN LYMPH NODE SIZE AND THE EXTENT OF REPLACEMENT BY METASTATIC CARCINOMA^a.

Lymph Node Size (cm.)	Extent of Nodal Replacement			All Positive Discrete Nodes
	Minimal	Partial	Total	
Less than 0.5cm.	0	2	1	3
0.5-0.9cm.	2	13	2	17
1.0-1.4cm.	2	11	6	19
1.5-1.9cm.	2	3	2	7
2.0-2.4cm.	3	5	3	11
2.5-2.9cm.	0	1	3	4
3.0-3.4cm.	1	0	2	3
All Sizes	10	35	19	64

^a The extent of nodal replacement was subjectively graded as 'Minimal', 'Partial' or 'Total' as defined in the text (Chapter 4, Histological Methods).

Table 4.13

RELATIONSHIP BETWEEN ANATOMICAL LEVEL OF DISCRETE POSITIVE LYMPH NODES AND INCIDENCE AND EXTENT OF EXTRACAPSULAR SPREAD (ECS).

Extent of ECS	Anatomical Level					All Levels
	I	II	III	IV	V	
Positive, No ECS	10	12	4	3	3	32(50%)
Positive, With ECS	14	6	4	4	4	32(50%)
-permeation of peri- nodal lymphatics only	1	2	0	0	0	3 (5%)
-microscopic ECS	8	3	3	1	2	17(27%)
-macroscopic ECS	5	1	1	3	2	12(19%)
Total Number of Positive Nodes	24	18	8	7	7	64(100%)

Table 4.14

RELATIONSHIP BETWEEN SIZE OF METASTATIC LYMPH NODES AND INCIDENCE AND EXTENT OF EXTRACAPSULAR SPREAD (ECS).

Lymph Node Size (cm.)	Extent of Extracapsular Spread				All Positive Discrete Nodes
	Absent	Permeation of Perinodal Lymphatics Only	Microscopic ECS	Macroscopic ECS	
< 0.5cm.	2	0	2	0	4
0.5-0.9cm.	6	0	7	3	16
1.0-1.4cm.	11	1	3	4	19
1.5-1.9cm.	4	1	2	0	7
2.0-2.4cm.	5	1	2	3	11
2.5-2.9cm.	1	0	1	2	4
3.0-3.4cm.	3	0	0	0	3
All Sizes	32	3	17	12	64

Table 4.15

RELATIONSHIP BETWEEN INCIDENCE AND EXTENT OF EXTRACAPSULAR SPREAD (ECS) AND EXTENT OF NODAL REPLACEMENT.

Incidence/ Extent of ECS	Extent of Nodal Replacement ^a			All Positive Discrete Nodes
	Minimal	Partial	Total	
ECS, Absent	9	18	5	32
Permeation of Perinodal Lymphatics Only	1	2	0	3
ECS, Microscopic	0	14	3	17
ECS, Macroscopic	0	1	11	12
All Positive Discrete Nodes	10	35	19	64

^a The extent of nodal replacement was subjectively graded as 'Minimal', 'Partial', or 'Total' as defined in the text (Chapter 4, Histological Methods).

Table 5.1

ACCURACY OF CLINICAL ASSESSMENT OF METASTATIC STATUS IN RELATION TO SITE AND T STAGE OF PRIMARY TUMOUR.

T Site/ T Stage	Clin. N+ Hist. N+	Clin. N+ Hist. N-	Clin. N- Hist. N-	Clin. N- Hist. N+	Accuracy
Low-risk Sites ^a (n = 16)	1	3	10	2	11/16 (69%)
High-risk Sites ^b (n = 64)	19	10	23	12	42/64 (66%)
T1 (n = 22)	6	2	12	2	18/22 (82%)
T2 (n = 28)	5	4	10	9	15/28 (54%)
T3 (n = 9)	2	2	4	1	6/9 (67%)
T4 (n = 21)	7	5	7	2	14/21 (67%)
All T Sites/ All T Stages (n = 80)	20	13	33	14	53/80 (66%)

^a Lower alveolar ridge/retromolar trigone/buccal mucosa.

^b Oral tongue/floor of mouth/oropharynx.

Table 5.2

CLINICAL AND PATHOLOGICAL FEATURES IN CLINICALLY FALSE-POSITIVE NECK DISSECTIONS.

Case ND	T Site/ T Stage	Surgical Procedure ^a	Level of Clinically Positive Node	Pathological Findings
134	Oral Tongue	T3 Uni/F	I	Chronic sialadenitis/fibrosis of SMG ^b
93	Oral Tongue	T3 Bi/R	I	Chronic sialadenitis/multiple calculi of SMG
42	FOM ^c	T2 Bi/F	I	Acute-on-chronic sialadenitis of SMG
59§	FOM	T4 Bi/F	I	Chronic sialadenitis/fibrosis of SMG
132	FOM	T1 Uni/SOH	I	Mucous extravasation cyst deep to sublingual gland
90	Lower Ridge	T4 Uni/F	I	Direct spread of primary tumour
98	Lower Ridge	T4 Uni/R	I	Direct spread of primary tumour
41	Oral Tongue	T2 Uni/F	I	Reactive hyperplasia: four nodes (1.2-1.5cm.)
58§	FOM	T4 Bi/F	I	Reactive hyperplasia: three nodes (2.0-2.2cm.)
55	Buccal Mucosa	T4 Uni/F	II	Calcified node (4.5cm.). Reactive hyperplasia: five nodes (1.0-2.7cm.)
16	Oral Tongue	T2 Uni/R	II	Reactive hyperplasia: twelve nodes (0.5-3.5cm.)
18	Oral Tongue	T2 Uni/R	II	Reactive hyperplasia (granulomatous): thirteen nodes (0.5-2.4cm.)
116	Oropharynx	T1 Uni/SOH	II	Reactive hyperplasia: three nodes (2.0-2.2cm.)

^a Uni = Unilateral procedure, Bi = Bilateral procedure, R = Radical, F = Functional, SOH = Supra-omohyoid.

^b SMG = Submandibular salivary gland.

^c FOM = Floor of mouth.

§ One patient had bilateral false-positive clinical assessments.

Table 5.3

CLINICAL AND PATHOLOGICAL FEATURES IN CLINICALLY FALSE-NEGATIVE NECK DISSECTIONS.

Case ND	T Site/ T Stage	Surgical Procedure ^a	Histologically Positive Node(s) Level	Size	Degree of Replacement	Other Features
2	Buccal Mucosa	T2 Uni/R	I	2.3cm.	Total	In bony depression
5	Buccal Mucosa	T2 Uni/SOH	I	1.6cm.	Minimal	
			I	2.3cm.	Minimal	
152	Oral Tongue	T2 Bi/F	I	0.3cm.	Total	Microscopic ECS
			I	0.7cm.	Partial	
129	Oral Tongue	T2 Uni/F	II	1.7cm.	Partial	
144	Oral Tongue	T2 Uni/SOH	I	0.5cm.	Partial	Microscopic ECS
			II	0.6cm.	Minimal	
			III	1.3cm.	Partial	Microscopic ECS
120	Oral Tongue	T2 Uni/F	I	1.0cm.	Minimal	
			II	1.2cm.	Partial	
			II	1.4cm.	Partial	Emboli in perinodal lymphatics
			II	2.1cm.	Total	Microscopic ECS
			III	0.9cm.	Partial	Microscopic ECS
52	Oral Tongue	T3 Uni/F	II	2.1cm.	Minimal	
			IV	2.0cm.	Minimal	
107§	FOM ^b	T1 Bi/SOH	I	1.2cm.	Partial	Microscopic ECS
106§	FOM	T1 Bi/SOH	I	0.7cm.	Partial	Microscopic ECS
			I	1.3cm.	Partial	Microscopic ECS
115	FOM	T2 Bi/SOH	I	0.8cm.	Minimal	
136	FOM	T2 Bi/F	II	2.0cm.	Partial	Emboli in perinodal lymphatics
111	FOM	T2 Uni/F	II	1.4cm.	Partial	
			II	2.1cm.	Total	Microscopic ECS
109	FOM	T4 Uni/F	II	1.6cm.	Partial	
51	FOM	T4 Uni/SOH	II	2.5cm.	Total	Microscopic ECS

^a Uni = Unilateral procedure, Bi = Bilateral procedure, R = Radical, F = Functional, SOH = Supra-omohyoid.

§ One patient had bilateral false-positive clinical assessments.

^c FOM = Floor of mouth.

Table 5.4

ANATOMICAL DISTRIBUTION OF LYMPH NODES IN SEVENTY-ONE SIDES OF NECK DISSECTION GROUPED ACCORDING TO TYPE OF SURGICAL PROCEDURE.

Surgical Procedure	Nodal Yield at Anatomical Level						All Levels
	I	II	III	IV	V	II-IV	
RADICAL (n = 11)							
Mean	5.0	11.1	8.7	6.4	13.8	26.2	45.0
SD	2.0	4.3	3.7	3.4	5.5	9.4	11.1
Median	5.0	11.0	10.0	6.0	12.0	26.0	41.0
Range	2-8	4-17	3-15	1-14	7-23	13-43	31-68
Sum	55	122	96	70	152	288	495
FUNCTIONAL (n = 35)							
Mean	4.6	6.9	4.6	5.3	9.0	16.7	30.3
SD	1.7	2.8	2.5	2.9	5.5	5.8	9.2
Median	4.0	6.0	4.0	5.0	9.0	16.0	28.0
Range	3-11	3-12	1-12	1-13	3-32	7-31	18-54
Sum	162	241	160	184	315	585	1062
SUPRA-OMOHYOID (n = 25)							
Mean	4.0	5.8	3.1	3.4		12.4	16.4
SD	1.3	3.6	1.9	2.7		6.8	6.9
Median	4.0	4.5	2.0	2.0		14.0	14.0
Range	2-7	2-19	1-7	1-10		5-35	7-38
Sum	99	146	78	86		310	409
ALL DISSECTIONS (n = 71, except Level V: n = 46)							
Mean	4.5	7.2	4.7	4.8	10.2	16.7	27.7
SD	1.7	3.7	3.1	3.1	5.8	8.1	13.1
Median	4.0	6.5	4.0	4.0	9.0	15.0	25
Range	2-11	2-19	1-15	1-14	3-32	5-43	7-68
Sum	316	509	334	340	467	1183	1966

Table 5.5

COMPARISON OF NODAL YIELD IN RADICAL, FUNCTIONAL AND SUPRA-OMOHYOID NECK DISSECTIONS^a.

Type of Neck Dissection and Anatomical Level	t Value	d.f. ^b	Probability Value (P)
RADICAL versus FUNCTIONAL (n = 11) (n = 35)			
Level I	0.602	44	0.56
Level II	3.082 ^c	10	0.01*
Level III	3.444	10	0.006*
Level IV	1.071	44	0.29
Level V	2.550	44	0.01*
Levels II-IV	3.157 ^c	10	0.01*
All Levels	4.394	44	<0.0001*
RADICAL versus SUPRA-OMOHYOID (n = 11) (n = 25)			
Level I	1.863	34	0.07
Level II	3.822	34	0.0006*
Level III	4.713 ^c	10	0.0009*
Level IV	2.773	34	0.009*
Levels II-IV	4.972	34	<0.0001*
All Levels	7.924 ^c	10	<0.0001*
FUNCTIONAL versus SUPRA-OMOHYOID (n = 35) (n = 25)			
Level I	1.614	58	0.11
Level II	1.277	58	0.20
Level III	2.432	58	0.02*
Level IV	2.490	58	0.01*
Levels II-IV	2.641	58	0.01*
All Levels	6.422	58	<0.0001*

^a Groups of neck dissections are compared by the Two Sample t Test.

^b Degrees of freedom.

^c The t value is corrected for unequal variance.

* Significant at the 5% level.

Table 5.6

COMPARISON OF NODAL YIELD IN UNILATERAL AND BILATERAL RADICAL NECK DISSECTIONS^a.

Anatomical Level		Unilateral Procedures n = 8	Bilateral Procedures n = 3	t Value	d.f. ^b	Probability Value
I	Mean (SD)	5.3 (2.1)	4.3 (1.5)	0.675	9	0.52
	Median	5.5	4.0			
	Range	2-8	3-6			
	Sum	42	13			
II	Mean (SD)	12.0 (4.5)	8.7 (2.5)	1.180	9	0.27
	Median	13.5	9.0			
	Range	4-17	6-11			
	Sum	96	26			
III	Mean (SD)	9.6 (3.4)	6.3 (4.2)	1.351	9	0.21
	Median	10.0	5.0			
	Range	5-15	3-11			
	Sum	77	19			
IV	Mean (SD)	7.4 (3.3)	3.7 (2.3)	1.766	9	0.11
	Median	6.5	5.0			
	Range	3-14	1-5			
	Sum	59	11			
V	Mean (SD)	13.8 (6.0)	14.0 (5.3)	0.063	9	0.95
	Median	12.5	12.0			
	Range	7-23	10-20			
	Sum	110	42			
Levels II-IV						
	Mean (SD)	29.0 (8.8)	18.7 (7.4)	1.795	9	0.10
	Median	27.5	16.0			
	Range	14-43	13-27			
	Sum	232	56			
All Levels						
	Mean (SD)	48.0 (11.4)	37.0 (5.3)	1.570	9	0.15
	Median	46.0	39.0			
	Range	35-68	31-41			
	Sum	384	111			

^a Unilateral and bilateral neck dissections are compared by the Two Sample t Test.

^b Degrees of freedom.

Table 5.7

COMPARISON OF NODAL YIELD IN UNILATERAL AND BILATERAL FUNCTIONAL NECK DISSECTIONS^a.

Anatomical Level		Unilateral Procedures n = 19	Bilateral Procedures n = 16	t Value	d.f. ^b	Probability Value
I	Mean (SD)	4.8 (1.9)	4.4 (1.5)	0.593	33	0.56
	Median	4.0	4.0			
	Range	3-11	3-8			
	Sum	91	71			
II	Mean (SD)	7.9 (2.8)	5.7 (2.3)	2.547	33	0.02*
	Median	9.0	5.0			
	Range	3-12	3-12			
	Sum	150	91			
III	Mean (SD)	5.9 (2.4)	3.0 (1.6)	4.087	33	0.0003*
	Median	6.0	2.5			
	Range	2-12	1-6			
	Sum	112	48			
IV	Mean (SD)	6.3 (3.3)	4.0 (1.6)	2.724 ^c	15	0.02*
	Median	5.0	4.0			
	Range	2-13	1-6			
	Sum	120	64			
V	Mean (SD)	8.6 (3.7)	9.5 (7.1)	0.470 ^c	15	0.65
	Median	9.0	8.0			
	Range	3-16	3-32			
	Sum	163	152			
Levels II-IV						
	Mean (SD)	20.1 (5.1)	12.7 (3.7)	4.862	33	<0.0001*
	Median	20.0	13.0			
	Range	11-31	7-22			
	Sum	382	203			
All Levels						
	Mean (SD)	33.5 (7.5)	26.6 (9.8)	2.337	33	0.02*
	Median	33.0	24.5			
	Range	21-47	18-54			
	Sum	636	426			

^a Unilateral and bilateral neck dissections are compared by the Two Sample t Test.

^b Degrees of freedom.

^c The t value is corrected for unequal variance.

* Significant at the 5% level.

Table 5.8

COMPARISON OF NODAL YIELD IN UNILATERAL AND BILATERAL SUPRA-OMOHYOID NECK DISSECTIONS^a.

Anatomical Level		Unilateral Procedures n = 9	Bilateral Procedures n = 16	t Value	d.f. ^b	Probability Value
I	Mean (SD)	3.8 (1.6)	4.1 (1.2)	0.503	23	0.63
	Median	3.0	4.0			
	Range	2-7	2-7			
	Sum	34	65			
II	Mean (SD)	7.3 (5.0)	5.0 (2.3)	1.329 ^c	8	0.22
	Median	7.0	4.0			
	Range	2-19	2-10			
	Sum	66	80			
III	Mean (SD)	3.7 (2.1)	2.8 (1.7)	1.096	23	0.28
	Median	3.0	2.0			
	Range	1-7	1-7			
	Sum	33	45			
IV	Mean (SD)	4.4 (3.6)	2.9 (1.9)	1.207 ^c	8	0.26
	Median	4.0	2.0			
	Range	1-10	1-9			
	Sum	40	46			
Levels II-IV						
	Mean (SD)	15.4 (9.5)	10.7 (4.2)	1.432 ^c	8	0.19
	Median	15.0	10.0			
	Range	5-35	5-19			
	Sum	139	171			
All Levels						
	Mean (SD)	19.2 (9.1)	14.8 (4.9)	1.363	8	0.21
	Median	18.0	14.0			
	Range	7-38	9-24			
	Sum	173	236			

^a Unilateral and bilateral neck dissections are compared by the Two Sample t Test.

^b Degrees of freedom.

^c The t value is corrected for unequal variance.

Table 6.1

THE HISTOLOGICAL MALIGNANCY GRADING SYSTEM AND POINT SCORING CRITERIA.

Histological Feature	Point Score			
	1	2	3	4
Degree of Keratinisation	High, well-formed pearls	Moderate, attempts at pearl formation	Poor, single cells	None identified
Nuclear Polymorphism	Slight	Moderate	Abundant	Extreme
Mitoses, per 10 HPF	0-15	16-35	36-55	>55
Pattern of Invasion	Pushing	Bands	Cords or islands, >15 cells	Single cells small cords or islands, <15 cells
Stage of Invasion	Borderline	Invasion into lamina propria	Invasion into submucosa	Invasion into muscle
Lymphoplasmacytic Infiltrate	Continuous rim	Moderate, many large patches	Slight, either diffuse or a few small patches	None

Table 6.2

COMPARISON OF HISTOLOGICAL MALIGNANCY GRADING AND IDENTIFICATION OF PERINEURAL AND VASCULAR INVASION IN THIRTY PILOT STUDY CASES ASSESSED ON TWO SEPARATE OCCASIONS.

Pilot Test Case	Histological Feature ^a												N ^b		V ^b	
	K		NP		M		P		S		L					
1	1	1	3	3	3	3	3	4	3	3	2	3	0	0	0	0
2	1	1	2	2	2	2	3	3	4	4	1	1	1	1	0	0
3	1	1	2	2	2	2	1	1	4	4	3	3	1	0	0	0
4	2	2	2	2	2	2	2	2	3	3	1	1	0	0	0	0
5	2	2	2	3	3	3	2	2	4	4	2	2	0	0	0	0
6	1	1	1	1	2	3	3	4	4	4	3	3	0	1	0	0
7	1	2	2	2	1	2	3	3	4	4	2	2	0	0	0	0
8	1	1	3	3	3	3	3	3	4	4	3	3	1	1	1	1
9	3	3	1	1	1	1	3	3	4	4	3	3	0	0	0	0
10	1	1	2	2	2	2	2	2	4	4	2	2	0	0	0	0
11	4	4	2	2	2	2	4	3	4	4	4	3	1	1	0	1
12	3	3	2	2	3	3	3	3	4	4	3	3	1	1	1	1
13	2	1	3	3	1	1	2	2	4	4	2	2	0	0	0	0
14	1	1	3	3	2	2	3	3	4	4	3	3	0	0	0	0
15	3	3	3	3	4	3	3	3	4	4	4	4	1	1	1	1
16	1	1	3	3	2	2	3	3	4	4	2	2	0	0	0	0
17	3	3	3	3	1	1	3	3	3	3	1	1	0	0	0	0
18	3	3	1	1	3	3	3	3	4	4	4	4	1	0	0	0
19	2	2	2	3	2	2	3	3	3	3	2	2	0	0	0	0
20	2	2	2	2	3	3	3	3	4	4	3	3	1	1	0	0
21	2	2	2	2	2	2	1	1	4	4	3	3	0	0	0	0
22	1	1	2	2	2	2	3	3	4	4	1	1	0	0	0	0
23	3	3	2	2	2	2	3	3	3	3	2	3	0	0	0	0
24	1	1	2	2	2	2	3	3	4	4	3	3	0	0	1	0
25	1	1	2	2	2	2	2	2	4	4	2	3	0	0	0	0
26	3	3	2	2	4	4	3	3	4	4	4	4	1	1	1	1
27	1	1	1	1	2	2	2	2	4	4	3	3	0	0	0	0
28	4	3	2	2	2	2	4	3	4	4	3	3	1	1	1	0
29	3	3	1	1	2	2	3	3	4	4	3	3	0	0	0	0
30	3	3	3	3	3	3	4	4	4	4	1	1	0	0	0	0

^a K = Degree of Keratinisation, NP = Nuclear Polymorphism, M = Frequency of Mitosis, P = Pattern of Invasion, S = Stage of Invasion, L = Lymphoplasmacytic Infiltrate, N = Perineural Invasion, V = Vascular Invasion.

^b Not Identified = 0, Identified = 1.

Table 6.3

CONSISTENCY OF MALIGNANCY GRADING AND IDENTIFICATION OF PERINEURAL AND VASCULAR INVASION IN PILOT STUDY CASES.

Histological Feature	Consistency (%)
Degree of Keratinisation	90%
Nuclear Polymorphism	93%
Frequency of Mitosis	90%
Pattern of Invasion	87%
Stage of Invasion	100%
Lymphoplasmacytic Infiltrate	87%
Perineural Invasion	90%
Vascular Invasion	90%

Table 6.4

CLINICAL FEATURES IN SERIES II PATIENTS.

Case Number	Sex	Age	T Site	T Stage
<u>CASES WITH LYMPH NODE METASTASIS</u>				
ND9	Male	61	Tongue	T1
ND31	Male	65	Tongue	T2
ND39	Female	68	Tongue	T3
ND40	Female	62	Tongue	T1
ND51	Male	72	Floor of Mouth	T4
ND52	Male	67	Tongue	T3
ND63/64	Male	64	Tongue	T2
ND72/73	Male	46	Floor of Mouth	T4
ND74/89	Male	51	Floor of Mouth	T1
ND94	Male	68	Floor of Mouth	T4
ND96	Female	63	Floor of Mouth	T4
ND106/107	Female	61	Floor of Mouth	T1
ND109	Male	53	Floor of Mouth	T4
ND111	Female	77	Floor of Mouth	T2
ND112	Female	61	Tongue	T2
ND114/115	Female	62	Floor of Mouth	T2
ND118	Male	43	Floor of Mouth	T1
ND120	Male	66	Tongue	T2
ND129	Male	63	Tongue	T2
ND135	Male	71	Floor of Mouth	T2
ND136	Male	56	Floor of Mouth	T2
ND144	Male	81	Tongue	T2
ND145	Male	52	Floor of Mouth	T1
ND152	Male	60	Tongue	T2
ND170	Male	56	Floor of Mouth	T1
ND175	Male	42	Tongue	T2
ND176	Female	72	Tongue	T2
<u>CASES WITHOUT LYMPH NODE METASTASIS</u>				
ND13	Female	67	Tongue	T2
ND16	Male	50	Tongue	T2
ND18	Male	46	Tongue	T2
ND22	Female	55	Tongue	T1
ND41	Female	64	Tongue	T2
ND42/43	Male	63	Floor of Mouth	T2
ND47	Male	46	Tongue	T1
ND48	Female	47	Floor of Mouth	T1
ND58/59	Male	65	Floor of Mouth	T4
ND75/76	Male	64	Floor of Mouth	T2
ND85	Male	45	Tongue	T1
ND92/93	Female	79	Tongue	T3
ND132	Male	74	Floor of Mouth	T1
ND134	Male	37	Tongue	T3
ND138/139	Female	57	Floor of Mouth	T1
ND154/155	Female	58	Floor of Mouth	T1
ND166/167	Male	76	Floor of Mouth	T1
ND169	Male	64	Floor of Mouth	T1

Table 6.5

EXTENT OF NODAL METASTASIS IN SERIES II PATIENTS.

Case No.	Tumour Site ^a	Tumour Stage	Laterality of Nodal Involvement	No. of Positive Nodes/Nodal Masses	Level of Involvement	ECS ^b
ND9	Tongue	T1	Unilateral	Two	III, IV	Macro
ND31	Tongue	T2	Unilateral	One	I	No ECS
ND39	Tongue	T3	Unilateral	Four	II, III, IV	Macro
ND40	Tongue	T1	Unilateral	One	II	Macro
ND51	FOM	T4	Unilateral	One	I	Micro
ND52	Tongue	T3	Unilateral	Two	II, IV	No ECS
ND63/64	Tongue	T2	Unilateral	Three	I, II	Macro
ND72/73	FOM	T4	Unilateral	Two	II, IV	Macro
ND74/89	FOM	T1	Bilateral	Three	I, II	Macro
ND94	FOM	T4	Unilateral	One	I	Macro
ND96	FOM	T4	Unilateral	Two	I, II	Macro
ND106/107	FOM	T1	Bilateral	Three	I	Micro
ND109	FOM	T4	Unilateral	One	II	No ECS
ND111	FOM	T2	Unilateral	Two	II	Micro
ND112	Tongue	T2	Unilateral	Two	I	Macro
ND114/115	FOM	T2	Bilateral	Five	I, II, III	Macro
ND118	FOM	T1	Unilateral	One	I	Micro
ND120	Tongue	T2	Unilateral	Five	I, II, III	Micro
ND129	Tongue	T2	Unilateral	One	II	No ECS
ND135	FOM	T2	Unilateral	Five	II, III, IV, V	Macro
ND136	FOM	T2	Unilateral	One	II	No ECS
ND144	Tongue	T2	Unilateral	Three	I, II, III	Micro
ND145	FOM	T1	Unilateral	One	III	Macro
ND152	Tongue	T2	Unilateral	Two	I	Micro
ND170	FOM	T1	Unilateral	Nine	I, II, III, IV	Macro
ND175	Tongue	T2	Unilateral	Two	II, III	Micro
ND176	Tongue	T2	Unilateral	Six	II, III, IV	Macro

^a FOM = Floor of mouth.

^b Extracapsular spread (ECS) is graded as 'No ECS', 'Macroscopic' or 'Microscopic' as defined in the text (Chapter 4, 'Gross Dissection and Sampling' and 'Histological Methods').

Table 6.6

TOBACCO USAGE, ALCOHOL CONSUMPTION AND EPITHELIAL DYSPLASIA IN SERIES II PATIENTS.

Case Number	Tumour Site	Tumour Stage	Cigarettes, number per day	Alcohol, units per day	Epithelial Dysplasia
<u>CASES WITH LYMPH NODE METASTASIS</u>					
ND9	Tongue	T1	0	2	Not identified
ND31	Tongue	T2	20	2	Not identified
ND39	Tongue	T3	15	2	Not identified
ND40	Tongue	T1	0	0	Not identified
ND51	Floor of Mouth	T4	30	8	Identified
ND52	Tongue	T3	20	4	Not Identified
ND63/64	Tongue	T2	20	6	Identified
ND72/73	Floor of Mouth	T4	25	4	Not identified
ND74/89	Floor of Mouth	T1	15	3	Not identified
ND94	Floor of Mouth	T4	25	5	Not identified
ND96	Floor of Mouth	T4	10	0	Not identified
ND106/107	Floor of Mouth	T1	0	0	Identified
ND109	Floor of Mouth	T4	20	18	Identified
ND111	Floor of Mouth	T2	5	0	Not identified
ND112	Tongue	T2	6	0	Not identified
ND114/115	Floor of Mouth	T2	10	0	Not identified
ND118	Floor of Mouth	T1	15	0	Identified
ND120	Tongue	T2	25	8	Identified
ND129	Tongue	T2	10	2	Not identified
ND135	Floor of Mouth	T2	12	6	Not identified
ND136	Floor of Mouth	T2	40	12	Identified
ND144	Tongue	T2	50	5	Identified
ND145	Floor of Mouth	T1	30	12	Identified
ND152	Tongue	T2	30	10	Identified
ND170	Floor of Mouth	T1	20	16	Identified
ND175	Tongue	T2	10	6	Identified
ND176	Tongue	T2	0	0	Identified
<u>CASES WITHOUT LYMPH NODE METASTASIS</u>					
ND13	Tongue	T2	15	4	Not identified
ND16	Tongue	T2	50	16	Identified
ND18	Tongue	T2	30	20	Not identified
ND22	Tongue	T1	0	1	Identified
ND41	Tongue	T2	0	0	Not identified
ND42/43	Floor of Mouth	T2	25	20	Identified
ND47	Tongue	T1	30	28	Identified
ND48	Floor of Mouth	T1	25	15	Identified
ND58/59	Floor of Mouth	T4	40	16	Identified
ND75/76	Floor of Mouth	T2	20	8	Not identified
ND85	Tongue	T1	0	0	Not identified
ND92/93	Tongue	T3	50	0	Not identified
ND132	Floor of Mouth	T1	25	1	Not identified
ND134	Tongue	T3	40	12	Identified
ND138/139	Floor of Mouth	T1	25	4	Identified
ND154/155	Floor of Mouth	T1	20	6	Identified
ND166/167	Floor of Mouth	T1	30	2	Identified
ND169	Floor of Mouth	T1	15	8	Identified

Table 6.7

TUMOUR SURFACE-DIMENSION AND THICKNESS IN SERIES II PATIENTS.

Case Number	Site	T Stage	Surface Dimension, D (mm.)	Actual Thickness, T _A (mm.)	Reconstructed Thickness, T _R (mm.)
<u>CASES WITH LYMPH NODE METASTASIS</u>					
ND9	Tongue	T1	24	18	18
ND31	Tongue	T2	20	9	11
ND39	Tongue	T3	60	25	25
ND40	Tongue	T1	9	4	3
ND51	Floor of Mouth	T4	15	10	10
ND52	Tongue	T3	45	15	20
ND63/64	Tongue	T2	22	11	9
ND72/73	Floor of Mouth	T4	40	17	15
ND74/89	Floor of Mouth	T1	12	4	4
ND94	Floor of Mouth	T4	30	15	11
ND96	Floor of Mouth	T4	65	10	12
ND106/107	Floor of Mouth	T1	18	5	6
ND109	Floor of Mouth	T4	28	10	10
ND111	Floor of Mouth	T2	22	6	8
ND112	Tongue	T2	35	18	18
ND114/115	Floor of Mouth	T2	30	10	10
ND118	Floor of Mouth	T1	8	3	3
ND120	Tongue	T2	30	15	15
ND129	Tongue	T2	30	21	21
ND135	Floor of Mouth	T2	20	7	11
ND136	Floor of Mouth	T2	28	6	12
ND144	Tongue	T2	35	17	17
ND145	Floor of Mouth	T1	5	2	2
ND152	Tongue	T2	30	14	16
ND170	Floor of Mouth	T1	16	2	2
ND175	Tongue	T2	35	15	17
ND176	Tongue	T2	40	14	16
<u>CASES WITHOUT LYMPH NODE METASTASIS</u>					
ND13	Tongue	T2	20	13	13
ND16	Tongue	T2	33	11	11
ND18	Tongue	T2	20	8	10
ND22	Tongue	T1	21	13	16
ND41	Tongue	T2	13	18	18
ND42/43	Floor of Mouth	T2	8	6	6
ND47	Tongue	T1	17	2	1
ND48	Floor of Mouth	T1	4	2	2
ND58/59	Floor of Mouth	T4	43	4	2
ND75/76	Floor of Mouth	T2	22	3	3
ND85	Tongue	T1	7	2	2
ND92/93	Tongue	T3	44	7	7
ND132	Floor of Mouth	T1	8	4	3
ND134	Tongue	T3	42	12	14
ND138/139	Floor of Mouth	T1	5	2	2
ND154/155	Floor of Mouth	T1	15	5	5
ND166/167	Floor of Mouth	T1	5	5	5
ND169	Floor of Mouth	T1	14	3	1

Table 6.8

TUMOUR SURFACE-DIMENSION AND THICKNESS IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS.

Pathological Feature ^a	Cases With Metastasis ^b	Cases Without Metastasis ^b	t value	P value
Dimension, D	27.9 (14.3)	18.9 (13.3)	2.13	0.04*
Thickness, T _A ^c	11.2 (6.1)	6.7 (4.8)	2.65	0.008*
Thickness, T _R ^c	11.9 (6.2)	6.7 (5.5)	2.88	0.005*

^a The mean measurement (mm.) and standard deviation are given.

^b Cases with and without metastasis are compared by the Two Sample t Test.

^c 'Actual Tumour Thickness, T_A', and 'Reconstructed Tumour Thickness, T_R', are described in the text (Chapter 6, 'Histological Assessment').

* Significant at the 5% level.

Table 6.9

FREQUENCY OF EPITHELIAL DYSPLASIA IN RELATION TO TOBACCO AND ALCOHOL USAGE.

Tobacco and Alcohol Usage ^a	Epithelial Dysplasia Identified	Epithelial Dysplasia Not Identified
Both Heavy Smoker and Heavy Drinker	11	1
Either Heavy Smoker or Heavy Drinker	5	5
Moderate/Non-Smoker and/or Moderate/Non-Drinker	8	15

^a A 'Heavy Smoker' is defined as more than 24 cigarettes per day.
A 'Heavy Drinker' is defined as more than six units of alcohol per day.

Table 6.10

HISTOLOGICAL MALIGNANCY GRADE IN SERIES II PATIENTS WITH LYMPH NODE METASTASIS.

Case No.	Histological Feature Point Score						Total Malignancy Grade
	Degree of Keratinisation	Nuclear Polymorphism	Frequency of Mitosis	Pattern of Invasion	Stage of Invasion	Lymphoplasmacytic Infiltrate	
ND9	4	2	2	4	4	4	20
ND31	1	2	2	3	4	1	13
ND39	4	3	4	3	4	4	22
ND40	3	3	3	4	4	1	18
ND51	1	4	3	3	3	2	16
ND52	1	3	3	3	4	3	17
ND63/64	4	1	4	3	4	4	20
ND72/73	2	2	3	3	4	3	17
ND74/89	3	1	2	4	4	3	17
ND94	1	2	2	3	4	3	15
ND96	3	2	4	3	4	4	20
ND106/107	3	3	2	4	3	2	17
ND109	1	3	4	4	4	4	20
ND111	3	3	4	4	4	4	22
ND112	2	2	3	3	4	3	17
ND114/115	3	3	4	4	4	3	21
ND118	2	4	2	3	4	3	18
ND120	3	4	3	4	4	4	22
ND129	4	2	3	4	4	2	19
ND135	3	2	4	3	4	3	19
ND136	4	3	4	4	4	4	23
ND144	4	3	4	4	4	3	22
ND145	3	1	2	3	3	2	14
ND152	3	3	3	4	4	2	19
ND170	3	4	3	4	4	3	21
ND175	2	2	3	4	4	3	18
ND176	3	2	3	4	4	4	20

Table 6.11

HISTOLOGICAL MALIGNANCY GRADE IN SERIES II PATIENTS WITHOUT LYMPH NODE METASTASIS.

Case No.	Histological Feature Point Score						Total Malignancy Grade
	Degree of Keratinisation	Nuclear Polymorphism	Frequency of Mitosis	Pattern of Invasion	Stage of Invasion	Lymphoplasmacytic Infiltrate	
ND13	1	2	2	2	4	1	12
ND16	1	3	2	3	4	3	16
ND18	2	3	1	1	4	2	13
ND22	1	1	2	2	4	3	13
ND41	3	2	4	3	4	3	19
ND42/43	3	2	2	3	3	4	17
ND47	2	2	2	1	4	3	14
ND48	1	2	2	2	3	1	11
ND58/59	1	2	1	2	4	2	12
ND75/76	2	3	2	3	3	2	15
ND85	2	3	1	3	3	1	13
ND92/93	1	2	2	1	4	3	13
ND132	2	1	3	3	3	3	15
ND134	1	3	3	3	4	1	15
ND138/139	2	1	2	1	3	1	10
ND154/155	2	3	2	3	3	2	15
ND166/167	2	3	3	1	3	3	15
ND169	2	3	4	1	3	2	15

Table 6.12

COMPARISON OF HISTOLOGICAL MALIGNANCY GRADE IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS.

Histological Feature	Chi Squared Test Statistic	Degrees of Freedom	Probability Value
Degree of Keratinisation	14.17	3	0.003*
Nuclear Polymorphism	3.07	3	0.38
Frequency of Mitosis	11.20	3	0.01*
Pattern of Invasion	25.00	3	0.00002*
Stage of Invasion	8.35	1	0.004*
Lymphoplasmacytic Infiltrate	7.06	3	0.07

* Significant at the 5% level.

Table 6.13

FREQUENCY OF DEGREE OF KERATINISATION POINT SCORES IN PRIMARY TUMOURS WITH AND WITHOUT METASTASIS.

Point Score ^a	Cases With Metastasis	Cases Without Metastasis
1	5	7
2	4	9
3	12	2
4	6	0

^a The criteria for grading and the four point score categories are defined in the text (Chapter 6, Histological Assessment).

Table 6.14

FREQUENCY OF NUCLEAR POLYMORPHISM POINT SCORES IN PRIMARY TUMOURS WITH AND WITHOUT METASTASIS.

Point Score ^a	Cases With Metastasis	Cases Without Metastasis
1	3	3
2	10	7
3	10	8
4	4	0

^a The criteria for grading and the four point score categories are defined in the text (Chapter 6, Histological Assessment).

Table 6.15

FREQUENCY OF MITOSIS POINT SCORES IN PRIMARY TUMOURS WITH AND WITHOUT METASTASIS.

Point Score ^a	Cases With Metastasis	Cases Without Metastasis
1	0	3
2	7	10
3	11	3
4	9	2

^a The four point score categories are defined in the text (Chapter 6, Histological Assessment).

Table 6.16

FREQUENCY OF PATTERN OF INVASION POINT SCORES IN PRIMARY TUMOURS WITH AND WITHOUT METASTASIS.

Point Score ^a	Cases With Metastasis	Cases Without Metastasis
1	0	6
2	0	4
3	12	8
4	15	0

^a The criteria for grading and the four point score categories are defined in the text (Chapter 6, Histological Assessment).

Table 6.17

FREQUENCY OF STAGE OF INVASION POINT SCORES IN PRIMARY TUMOURS WITH AND WITHOUT METASTASIS.

Point Score ^a	Cases With Metastasis	Cases Without Metastasis
1	0	0
2	0	0
3	3	9
4	24	9

^a The criteria for grading and the four point score categories are defined in the text (Chapter 6, Histological Assessment).

Table 6.18

FREQUENCY OF LYMHOPLASMACYTIC INFILTRATE POINT SCORES IN PRIMARY TUMOURS WITH AND WITHOUT METASTASIS.

Point Score ^a	Cases With Metastasis	Cases Without Metastasis
1	2	5
2	5	5
3	11	7
4	9	1

^a The criteria for grading and the four point score categories are defined in the text (Chapter 6, Histological Assessment).

Table 6.19

CORRELATION BETWEEN COMPONENT FEATURES OF THE HISTOLOGICAL MALIGNANCY GRADING SYSTEM^a.

	Histological Features ^b					
	K	N	M	P	S	L
N	$r_s=0.01$ $P=0.94$					
M	$r_s=0.45$ $P=0.002*$	$r_s=0.19$ $P=0.21$				
P	$r_s=0.57$ $P<0.001*$	$r_s=0.27$ $P=0.07$	$r_s=0.39$ $P=0.007*$			
S	$r_s=0.13$ $P=0.39$	$r_s=-0.01$ $P=0.94$	$r_s=0.28$ $P=0.06$	$r_s=0.31$ $P=0.04*$		
L	$r_s=0.43$ $P=0.003*$	$r_s=-0.02$ $P=0.88$	$r_s=0.48$ $P=0.001*$	$r_s=0.34$ $P=0.02*$	$r_s=0.39$ $P=0.009*$	
G	$r_s=0.73$ $P<0.001*$	$r_s=0.35$ $P=0.02*$	$r_s=0.75$ $P<0.001*$	$r_s=0.78$ $P<0.001*$	$r_s=0.44$ $P=0.002*$	$r_s=0.70$ $P<0.001*$

^a Spearman's Rank Correlation Test. The test statistic, r_s , and associated probability, P , are shown.

^b K = Degree of Keratinisation, N = Nuclear Polymorphism, M = Frequency of Mitosis, P = Pattern of Invasion, S = Stage of Invasion, L = Lymphoplasmacytic infiltrate, G = Histological Malignancy Grade.

* Significant at the 5% level.

Table 6.20

PERINEURAL AND VASCULAR INVASION IN SERIES II TUMOURS.

Case Number	Tumour Site	Tumour Stage	Perineural Invasion	Vascular Invasion
<u>CASES WITH LYMPH NODE METASTASIS</u>				
ND9	Tongue	T1	Identified	Identified
ND31	Tongue	T2	Identified	Identified
ND39	Tongue	T3	Identified	Identified
ND40	Tongue	T1	Not identified	Not identified
ND51	Floor of Mouth	T4	Not identified	Not identified
ND52	Tongue	T3	Identified	Identified
ND63/64	Tongue	T2	Identified	Identified
ND72/73	Floor of Mouth	T4	Identified	Identified
ND74/89	Floor of Mouth	T1	Identified	Not identified
ND94	Floor of Mouth	T4	Identified	Identified
ND96	Floor of Mouth	T4	Identified	Identified
ND106/107	Floor of Mouth	T1	Identified	Identified
ND109	Floor of Mouth	T4	Identified	Not identified
ND111	Floor of Mouth	T2	Identified	Identified
ND112	Tongue	T2	Identified	Identified
ND114/115	Floor of Mouth	T2	Not identified	Identified
ND118	Floor of Mouth	T1	Not identified	Not identified
ND120	Tongue	T2	Identified	Identified
ND129	Tongue	T2	Identified	Identified
ND135	Floor of Mouth	T2	Not identified	Identified
ND136	Floor of Mouth	T2	Not identified	Identified
ND144	Tongue	T2	Identified	Identified
ND145	Floor of Mouth	T1	Not identified	Not identified
ND152	Tongue	T2	Identified	Identified
ND170	Floor of Mouth	T1	Not identified	Identified
ND175	Tongue	T2	Identified	Identified
ND176	Tongue	T2	Identified	Identified
<u>CASES WITHOUT LYMPH NODE METASTASIS</u>				
ND13	Tongue	T2	Identified	Not identified
ND16	Tongue	T2	Not identified	Not identified
ND18	Tongue	T2	Not identified	Not identified
ND22	Tongue	T1	Not identified	Not identified
ND41	Tongue	T2	Identified	Identified
ND42/43	Floor of Mouth	T2	Identified	Not identified
ND47	Tongue	T1	Not identified	Not identified
ND48	Floor of Mouth	T1	Identified	Not identified
ND58/59	Floor of Mouth	T4	Not identified	Not identified
ND75/76	Floor of Mouth	T2	Not identified	Not identified
ND85	Tongue	T1	Not identified	Not identified
ND92/93	Tongue	T3	Not identified	Not identified
ND132	Floor of Mouth	T1	Not identified	Not identified
ND134	Tongue	T3	Identified	Identified
ND138/139	Floor of Mouth	T1	Not identified	Not identified
ND154/155	Floor of Mouth	T1	Not identified	Not identified
ND166/167	Floor of Mouth	T1	Not identified	Not identified
ND169	Floor of Mouth	T1	Not identified	Not identified

Table 6.21

CORRELATION BETWEEN COMPONENT FEATURES OF HISTOLOGICAL MALIGNANCY GRADE AND PERINEURAL AND VASCULAR INVASION^a.

	Histological Malignancy Grade	Perineural Invasion	Vascular Invasion
Degree of Keratinisation	$r_s = 0.73$ $P^s = <0.001^*$	$r_s = 0.20$ $P^s = 0.19$	$r_s = 0.48$ $P^s = 0.001^*$
Nuclear Polymorphism	$r_s = 0.35$ $P^s = 0.02^*$	$r_s = -0.17$ $P^s = 0.26$	$r_s = 0.07$ $P^s = 0.65$
Frequency of Mitosis	$r_s = 0.75$ $P^s = <0.001^*$	$r_s = 0.26$ $P^s = 0.09$	$r_s = 0.56$ $P^s = <0.001^*$
Pattern of Invasion	$r_s = 0.78$ $P^s = <0.001^*$	$r_s = 0.40$ $P^s = 0.007^*$	$r_s = 0.56$ $P^s = <0.001^*$
Stage of Invasion	$r_s = 0.44$ $P^s = 0.002^*$	$r_s = 0.34$ $P^s = 0.02^*$	$r_s = 0.52$ $P^s = <0.001^*$
Lymphoplasmacytic Infiltrate	$r_s = 0.70$ $P^s = <0.001^*$	$r_s = 0.28$ $P^s = 0.06^*$	$r_s = 0.38$ $P^s = 0.01^*$
Histological Malignancy Grade		$r_s = 0.36$ $P^s = 0.02^*$	
Perineural Invasion	$r_s = 0.35$ $P^s = 0.02^*$		$r_s = 0.60$ $P^s = <0.001^*$
Vascular Invasion	$r_s = 0.38$ $P^s = 0.01^*$		

^a Spearman's Rank Correlation Test. The test statistic, r_s , and associated probability, P , are shown.

* Significant at the 5% level.

Table 6.22

POTENTIAL PREDICTOR VARIABLES AND THEIR ASSOCIATED PROBABILITY VALUE.

Predictor Variable	Probability Value	Statistical Method
Tumour Site	1.00	Yates' Chi Squared Test
Tumour T Stage	0.28	Chi Squared Test
Sex	0.75	Yates' Chi Squared Test
Age	0.39	Two Sample t Test
Tobacco Usage	0.08	Mann-Whitney U Test
Alcohol Consumption	0.13	Mann-Whitney U Test
Tumour Dimension	0.04*	Two Sample t Test
Actual Tumour Thickness	0.008*	Two Sample t Test
Reconstructed Tumour Thickness	0.005*	Two Sample t Test
Epithelial Dysplasia	0.58	Yates' Chi Squared Test
Histological Malignancy Grade	0.0001*	Mann-Whitney U Test
Degree of Keratinisation	0.003*	Chi Squared Test
Nuclear Polymorphism	0.38	Chi Squared Test
Frequency of Mitosis	0.01*	Chi squared Test
Pattern of Invasion	0.00002*	Chi Squared Test
Stage of Invasion	0.004*	Chi Squared Test
Lymphoplasmacytic Infiltrate	0.07	Chi Squared Test
Perineural Invasion	0.01*	Yates' Chi Squared Test
Vascular Invasion	0.00005*	Yates' Chi Squared Test

* Significant at the 5% level.

Table 6.23

TRANSFORMATION OF MULTICATEGORICAL DATA INTO BINARY FORM.

Histological Feature	Binary Value	
	0	1
Degree of Keratinisation	Point scores 1 and 2 Formation of keratin pearls	Point scores 3 and 4 Individual cell or no keratinisation
Frequency of Mitosis	Point scores 1 and 2 0-35 per 10 HPF	Point scores 3 and 4 >35 per 10 HPF
Pattern of Invasion	Point scores 1 and 2 Pushing or broad strands and cords	Point scores 3 and 4 Thin cords or small islands or single cells
Stage of Invasion	Point score 3 Invasion into submucosa	Point score 4 Invasion into muscle
Lymphoplasmacytic Infiltrate	Point scores 1 and 2 Continuous rim or many large patches	Point scores 3 and 4 Slight or none

Table 6.24

LOGISTIC REGRESSION MODEL WITH ELEVEN INDEPENDENT VARIABLES.

Variable	Regression Coefficient (Beta)	Standard Error	Chi Squared (X^2)	Probability
Intercept ^a	-17.55	30.34	0.33	0.56
Tumour Dimension	0.00	0.08	0.01	0.92
Actual Tumour Thickness	0.01	0.34	0.00	0.96
Reconstructed Tumour Thickness	-0.22	0.36	0.36	0.55
Histological Malignancy Grade	0.63	0.51	1.54	0.22
Degree of Keratinisation	0.17	1.80	0.01	0.92
Frequency of Mitosis	0.13	1.63	0.01	0.94
Pattern of Invasion	8.29	§		
Stage of Invasion	1.86	1.90	0.95	0.33
Lymphoplasmacytic Infiltrate	-1.21	1.62	0.56	0.46
Perineural Invasion	-0.19	1.97	0.01	0.93
Vascular Invasion	2.38	2.54	0.88	0.35

§ Denotes infinity.

^a The intercept is the logit of the probability when all factors have a value of zero.

Table 6.25

CLASSIFICATION TABLE FOR THE LOGISTIC REGRESSION MODEL WITH ELEVEN INDEPENDENT VARIABLES.

	Predicted Negative	Predicted Positive	Total
True Negative	16	2	18
True Positive	2	25	27
Total	18	27	45

Sensitivity: 92.6%
Specificity: 88.9%
Correct: 91.1%
False Positive Rate: 7.4%
False Negative Rate: 11.1%

Table 6.26

LOGISTIC REGRESSION MODEL WITH NINE INDEPENDENT VARIABLES.

Variable	Regression Coefficient (Beta)	Standard Error	Chi Squared (X^2)	Probability
Intercept ^a	-17.57	30.53	0.33	0.56
Reconstructed Tumour Thickness	-0.20	0.20	0.93	0.34
Histological Malignancy Grade	0.64	0.50	1.67	0.20
Degree of Keratinisation	0.10	1.63	0.00	0.95
Frequency of Mitosis	0.10	1.60	0.00	0.95
Pattern of Invasion	8.20	§		
Stage of Invasion	1.88	1.88	1.00	0.32
Lymphoplasmacytic Infiltrate	-1.20	1.56	0.59	0.44
Perineural Invasion	-0.20	1.98	0.01	0.92
Vascular Invasion	2.43	2.49	0.95	0.33

§ Denotes infinity.

^a The intercept is the logit of the probability when all factors have a value of zero.

Table 6.27

LOGISTIC REGRESSION MODEL WITH FOUR INDEPENDENT VARIABLES.

Variable	Regression Coefficient (Beta)	Standard Error	Chi Squared (X ²)	Probab- ility
Intercept ^a	-11.42	4.32	7.00	0.008*
Reconstructed Tumour Thickness	-0.17	0.16	1.04	0.31
Histological Malignancy Grade	0.74	0.30	6.15	0.01*
Perineural Invasion	-0.01	1.47	0.00	0.99
Vascular Invasion	3.47	2.17	2.57	0.11

^a The intercept is the logit of the probability when all factors have a value of zero.

* Significant at the 5% level.

Table 6.28

CLASSIFICATION TABLE FOR THE LOGISTIC REGRESSION MODEL WITH FOUR INDEPENDENT VARIABLES.

	Predicted Negative	Predicted Positive	Total
True Negative	15	3	18
True Positive	3	24	27
Total	18	27	45

Sensitivity: 88.9%
Specificity: 83.3%
Correct: 86.7%
False Positive Rate: 11.1%
False Negative Rate: 16.7%

Table 6.29

LOGISTIC REGRESSION MODEL WITH THREE INDEPENDENT VARIABLES.

Variable	Regression Coefficient (Beta)	Standard Error	Chi Squared (X ²)	Probab- ility
Intercept ^a	-11.41	4.18	7.44	0.006*
Reconstructed Tumour Thickness	-0.17	0.16	1.05	0.31
Histological Malignancy Grade	0.73	0.28	6.72	0.009*
Vascular Invasion	3.47	1.93	3.21	0.07

^a The intercept is the logit of the probability when all factors have a value of zero.

* Significant at the 5% level.

Table 6.30

'BEST' LOGISTIC REGRESSION MODEL WITH TWO INDEPENDENT VARIABLES.

Variable	Regression Coefficient (Beta)	Standard Error	Chi Squared (X ²)	Probab- ility
Intercept ^a	-10.73	3.81	7.93	0.005*
Histological Malignancy Grade	0.64	0.24	7.04	0.008*
Vascular Invasion	1.95	1.04	3.52	0.05*

^a The intercept is the logit of the probability when all factors have a value of zero.

* Significant at the 5% level.

Table 6.31

'ALTERNATIVE' LOGISTIC REGRESSION MODEL WITH TWO INDEPENDENT VARIABLES.

Variable	Regression Coefficient (Beta)	Standard Error	Chi Squared (X^2)	Probability
Intercept ^a	-8.28	19.86	0.17	0.68
Pattern of Invasion	8.28	19.86	0.17	0.68
Vascular Invasion	2.35	0.94	6.28	0.01*

^a The intercept is the logit of the probability when all factors have a value of zero.

* Significant at the 5% level.

Table 6.32

CLASSIFICATION TABLE FOR 'ALTERNATIVE' TWO-VARIABLE LOGISTIC REGRESSION MODEL.

	Predicted Negative	Predicted Positive	Total
True Negative	16	2	18
True Positive	6	21	27
Total	18	27	45

Sensitivity: 77.8%
Specificity: 88.9%
Correct: 82.2%
False Positive Rate: 8.7%
False Negative Rate: 27.3%

Table 6.33

ESTIMATED PROBABILITY OF NODAL METASTASIS IN SERIES II PATIENTS.

Case No.	Histological Malignancy Grade	Vascular Invasion	Probability
<u>CASES WITH LYMPH NODE METASTASIS</u>			
ND 9	20	Identified	0.98
ND 31	13	Identified	0.38§
ND 39	22	Identified	0.99
ND 40	18	Not Identified	0.68
ND 51	16	Not Identified	0.37§
ND 52	17	Identified	0.89
ND 63/64	20	Identified	0.98
ND 72/73	17	Identified	0.89
ND 74/89	17	Not Identified	0.53
ND 94	15	Identified	0.70
ND 96	20	Identified	0.98
ND 106/107	17	Identified	0.89
ND 109	20	Not Identified	0.89
ND 111	22	Identified	0.99
ND 112	17	Identified	0.89
ND 114/115	21	Identified	0.99
ND 118	18	Not Identified	0.68
ND 120	22	Identified	0.99
ND 129	19	Identified	0.97
ND 135	19	Identified	0.97
ND 136	23	Identified	0.99
ND 144	22	Identified	0.99
ND 145	14	Not Identified	0.14§
ND 152	19	Identified	0.97
ND 170	21	Identified	0.99
ND 175	18	Identified	0.94
ND 176	20	Identified	0.98
<u>CASES WITHOUT LYMPH NODE METASTASIS</u>			
ND 13	12	Not Identified	0.04
ND 16	16	Not Identified	0.37
ND 18	13	Not Identified	0.08
ND 22	13	Not Identified	0.08
ND 41	19	Identified	0.97§
ND 42/43	17	Not Identified	0.53§
ND 47	14	Not Identified	0.14
ND 48	11	Not Identified	0.02
ND 58/59	12	Not Identified	0.04
ND 75/76	15	Not Identified	0.24
ND 85	13	Not Identified	0.08
ND 92/93	13	Not Identified	0.08
ND 132	15	Not Identified	0.24
ND 134	15	Identified	0.69§
ND 138/139	10	Not Identified	0.01
ND 154/155	15	Not Identified	0.24
ND 166/167	15	Not Identified	0.24
ND 169	15	Not Identified	0.24

§ Denotes a misclassification.

Table 7.1

COMPARISON OF STEREOLOGICAL ESTIMATION OF MEAN NUCLEAR VOLUME ON TWO SEPARATE OCCASIONS.

Pilot Test Case	Mean Nuclear Volume (μm^3)	Coefficient of Error
1	745.2	1.2
1	736.2	1.5
2	492.4	1.3
2	514.5	1.3
3	1305.0	1.6
3	1259.0	1.5
4	224.8	1.3
4	235.0	1.3
5	380.0	1.5
5	407.3	1.5

Table 7.2

NUCLEAR FEATURES IN TUMOURS IN SERIES II PATIENTS WITH METASTASIS.

Case Number	Mean Nuclear Volume μm^3	Coefficient of Error	Nuclear Polymorphism Point Score ^a
ND9	880.7	0.14	2
ND31	597.8	0.13	2
ND39	1305.0	0.16	3
ND40	498.2	0.16	3
ND51	981.9	0.13	4
ND52	490.5	0.14	3
ND63/64	224.8	0.16	1
ND72/73	630.0	0.13	2
ND74/89	360.6	0.17	1
ND94	792.0	0.14	2
ND96	460.1	0.14	2
ND106/107	766.1	0.14	3
ND109	1124.0	0.13	3
ND111	522.9	0.17	3
ND112	638.1	0.14	2
ND114/115	398.0	0.13	3
ND118	952.2	0.13	4
ND120	858.2	0.13	4
ND129	632.3	0.13	2
ND135	947.0	0.13	2
ND136	559.7	0.14	3
ND144	405.6	0.14	3
ND145	380.0	0.15	1
ND152	1089.0	0.13	3
ND170	603.3	0.15	4
ND175	954.3	0.16	2
ND176	1290.0	0.13	2

^a Criteria for point scoring 'Nuclear Polymorphism' are detailed in the text (Chapter 6, Histological Assessment).

Table 7.3

NUCLEAR FEATURES IN TUMOURS IN SERIES II PATIENTS WITHOUT METASTASIS.

Case Number	Mean Nuclear Volume μm^3	Coefficient of Error	Nuclear Polymorphism Point Score ^a
ND13	523.6	0.17	2
ND16	745.2	0.12	3
ND18	492.4	0.13	3
ND22	528.6	0.17	1
ND41	1249.0	0.18	2
ND42/43	406.4	0.15	2
ND47	239.5	0.15	2
ND48	488.0	0.19	2
ND58/59	353.0	0.16	2
ND75/76	1079.0	0.17	3
ND85	530.9	0.15	3
ND92/93	971.6	0.13	2
ND132	566.8	0.14	1
ND134	1340.0	0.17	3
ND138/139	524.8	0.13	1
ND154/155	768.9	0.15	3
ND166/167	719.6	0.15	3
ND169	576.0	0.14	3

^a Criteria for point scoring 'Nuclear Polymorphism' are detailed in the text (Chapter 6, Histological Assessment).

Section 2.

FIGURES.

1. Figures 4.1-4.13.
2. Figures 5.1-5.3.
3. Figures 6.1-6.15.
4. Figures 7.1-7.4.

Figure 4.1a

A UNILATERAL SURGICAL NECK DISSECTION SPECIMEN FOLLOWING PINNING OUT AND FIXATION.



The neck dissection is a radical procedure. The sternomastoid and omohyoid muscles have been pinned out in their extended positions prior to fixation. A bulky metastatic mass is present in the submandibular triangle.

Figure 4.1b

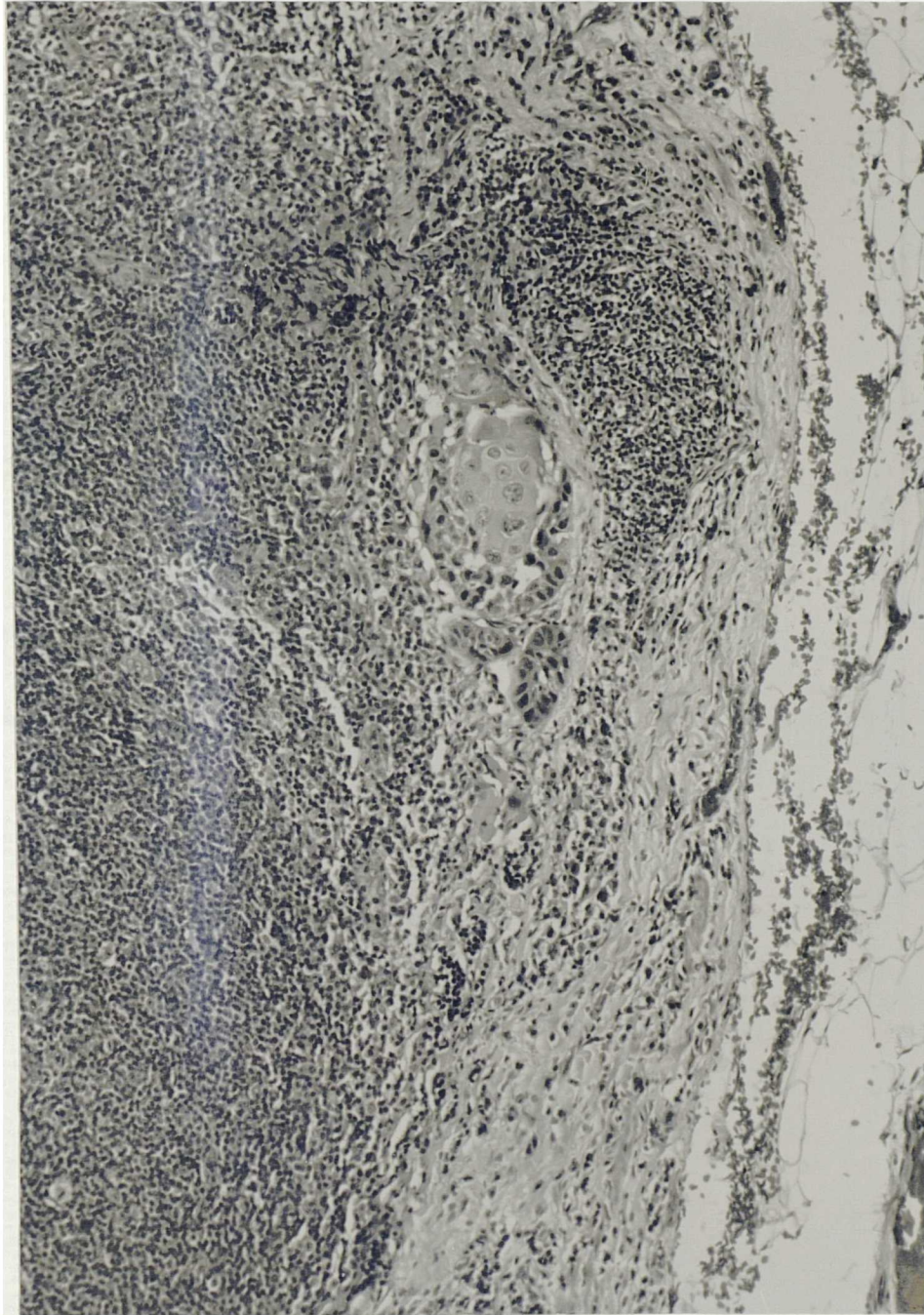
A BILATERAL SURGICAL NECK DISSECTION FOLLOWING PINNING OUT AND FIXATION.



Both neck dissections are functional procedures, and are continuous with the primary tumour, a T4 squamous cell carcinoma of floor of mouth, necessitating resection of the body of mandible and the oral tongue.

Figure 4.2a

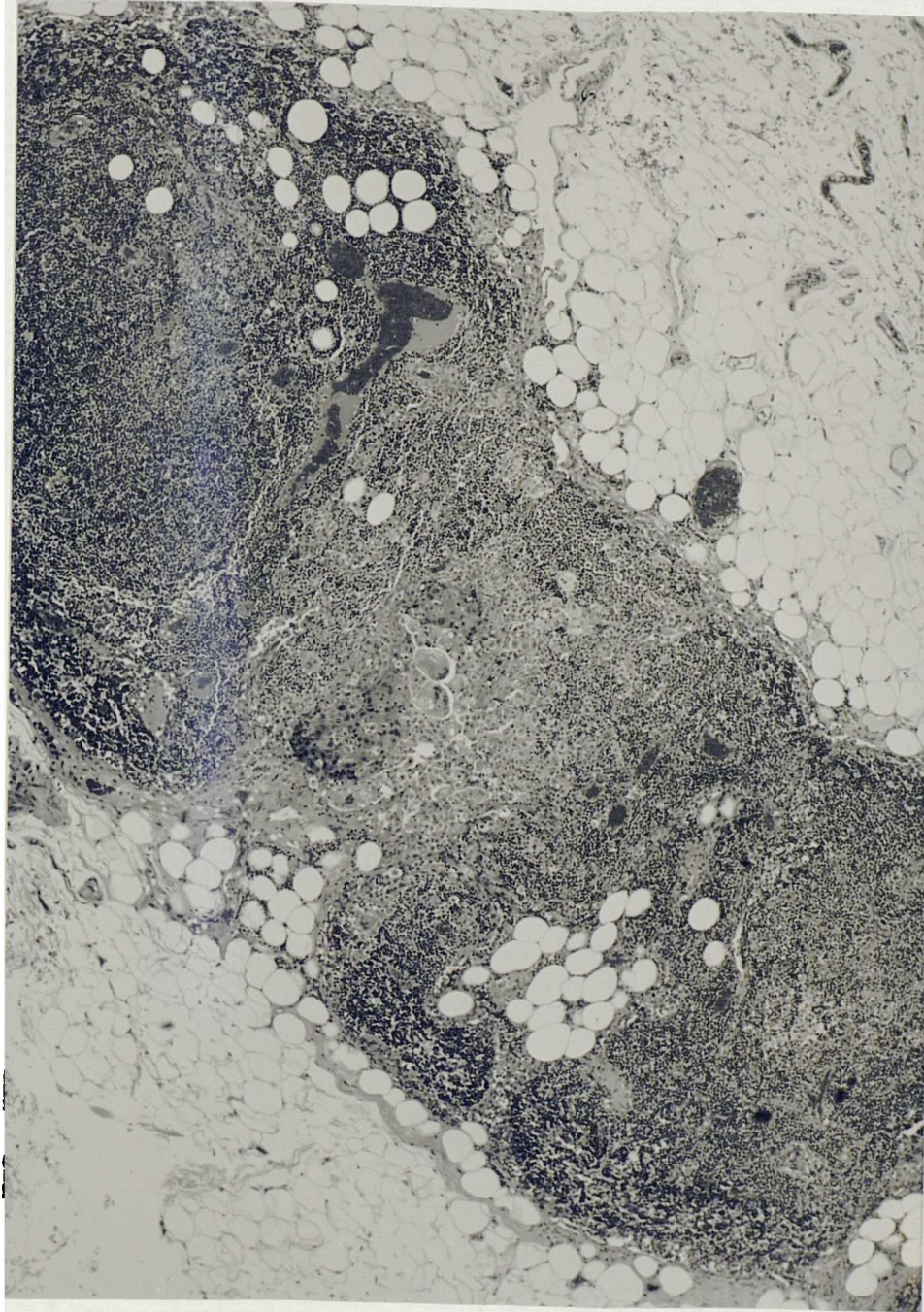
EXTENT OF NODAL REPLACEMENT: MINIMAL.



Metastatic carcinoma is seen as small islands of tumour cells within the peripheral sinuses of the node, with minimal replacement of normal nodal architecture. Haematoxylin and eosin. Original magnification, x100.

Figure 4.2b

EXTENT OF NODAL REPLACEMENT: PARTIAL.



Metastatic carcinoma is seen replacing approximately 15-20% of the normal nodal architecture. Haematoxylin and eosin. Original magnification, x40.

Figure 4.2c

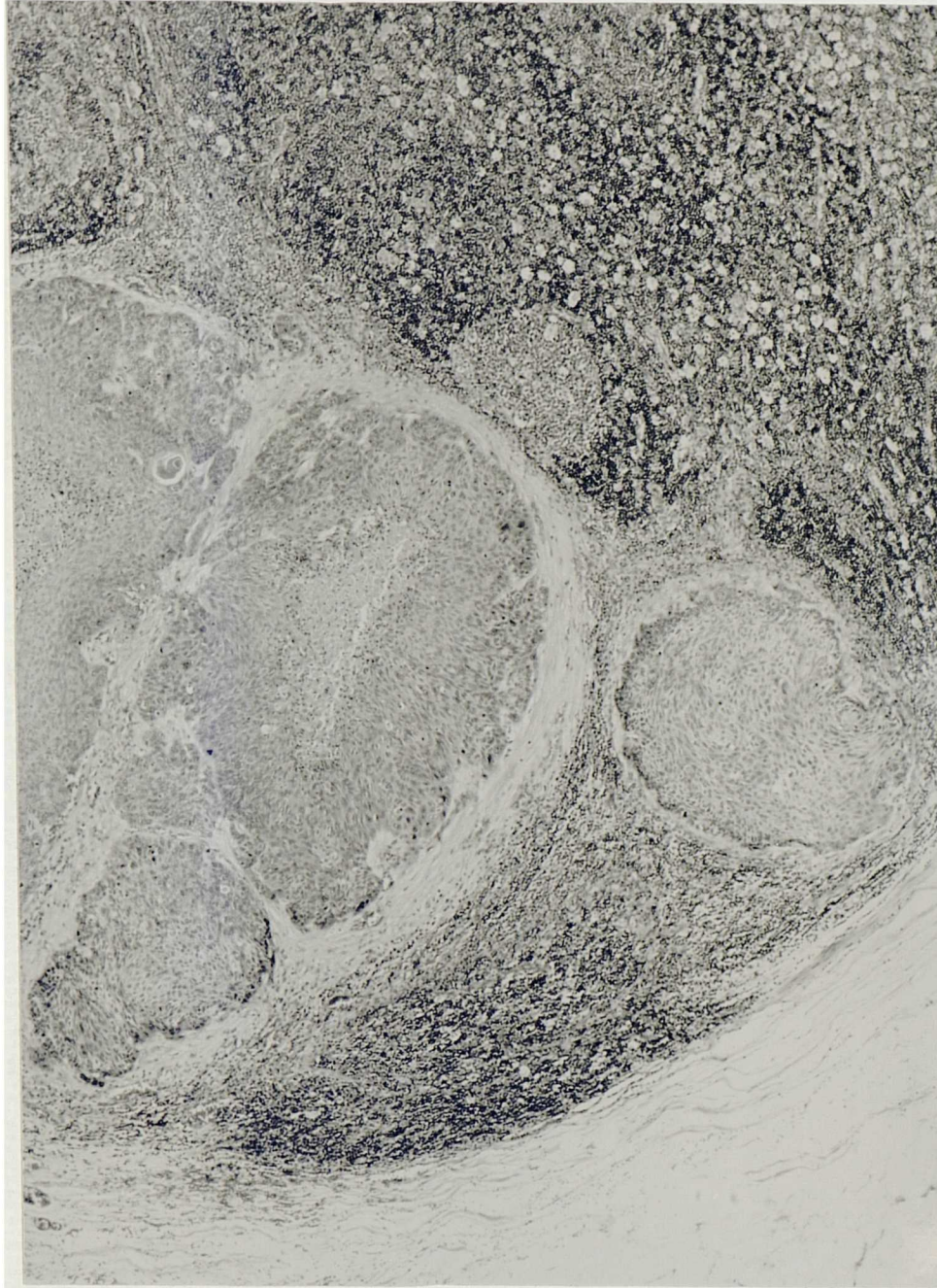
EXTENT OF NODAL REPLACEMENT: TOTAL.



The lymph node is almost completely replaced by metastatic carcinoma. Haematoxylin and eosin. Original magnification, x40.

Figure 4.3a

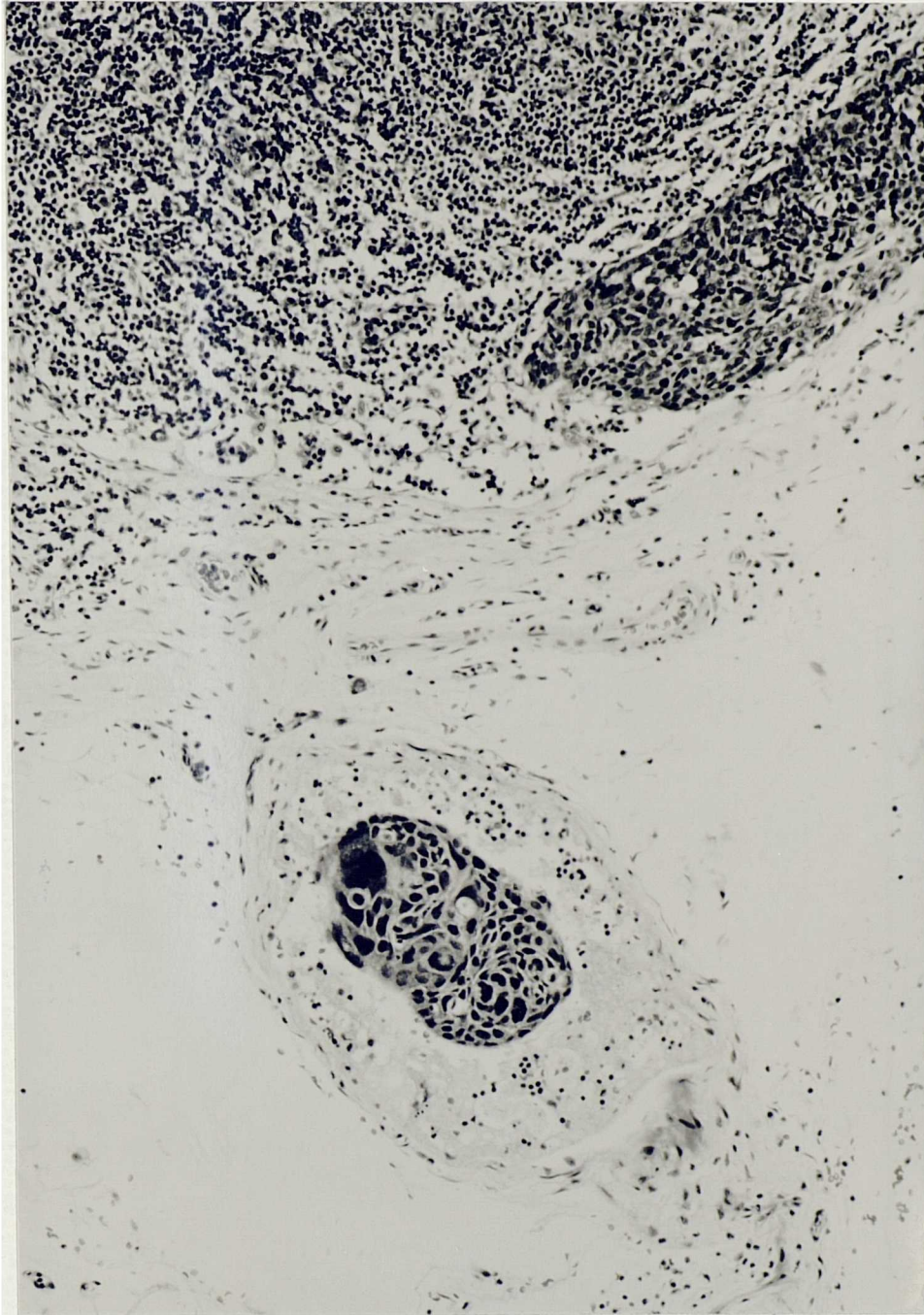
HISTOLOGICAL ASSESSMENT OF EXTRACAPSULAR SPREAD: NO EXTRACAPSULAR SPREAD.



Metastatic carcinoma is confined to the cortex and medulla of the node and there is no involvement of the capsule. Haematoxylin and eosin. Original magnification, x40.

Figure 4.3b

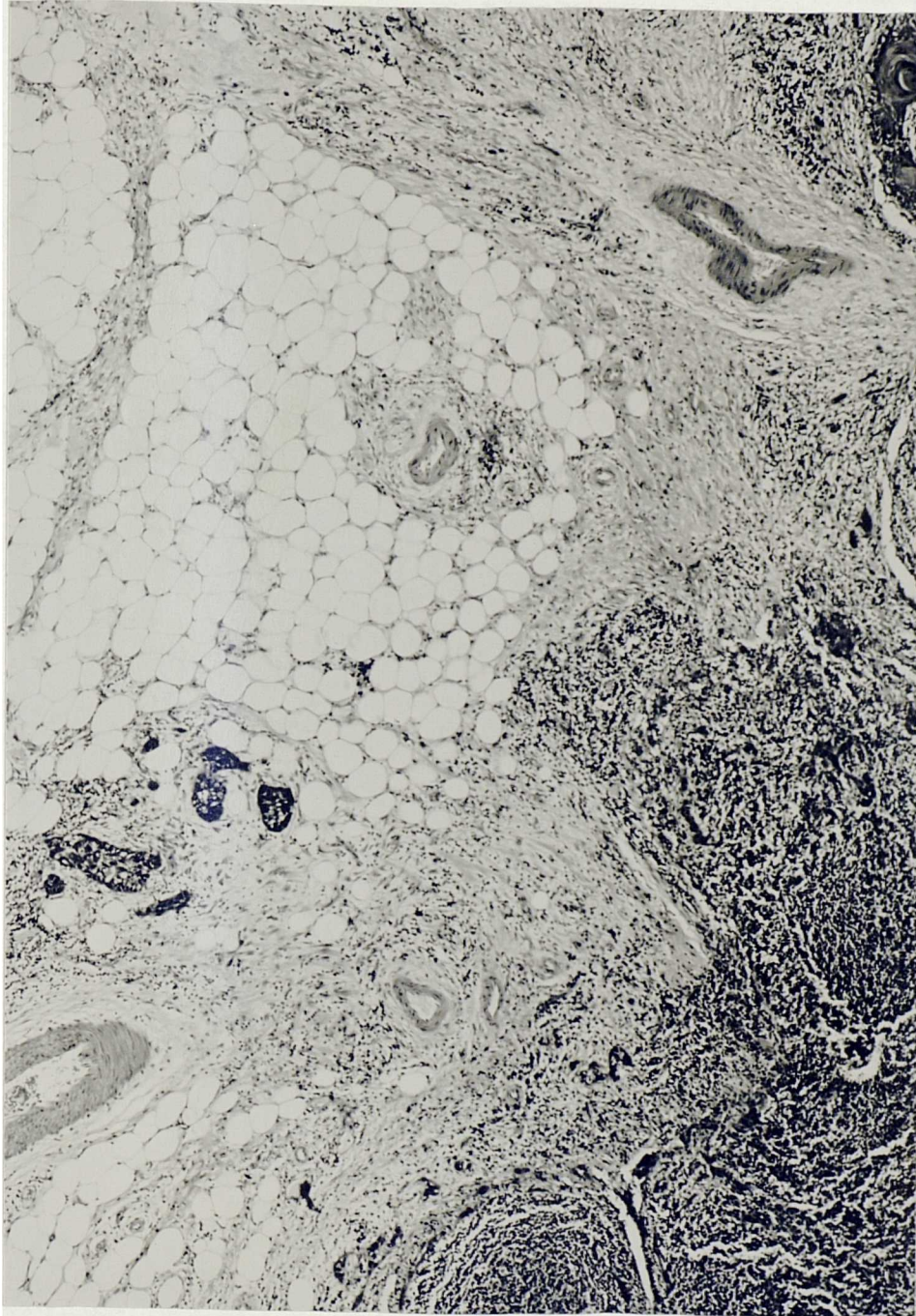
HISTOLOGICAL ASSESSMENT OF EXTRACAPSULAR SPREAD: MICROSCOPIC EMBOLISATION AND/OR PERMEATION OF PERINODAL LYMPHATICS.



Tumour cells are seen within a lymphatic vessel in the fibro-adipose tissue surrounding the node. Haematoxylin and eosin. Original magnification, x100.

Figure 4.3c

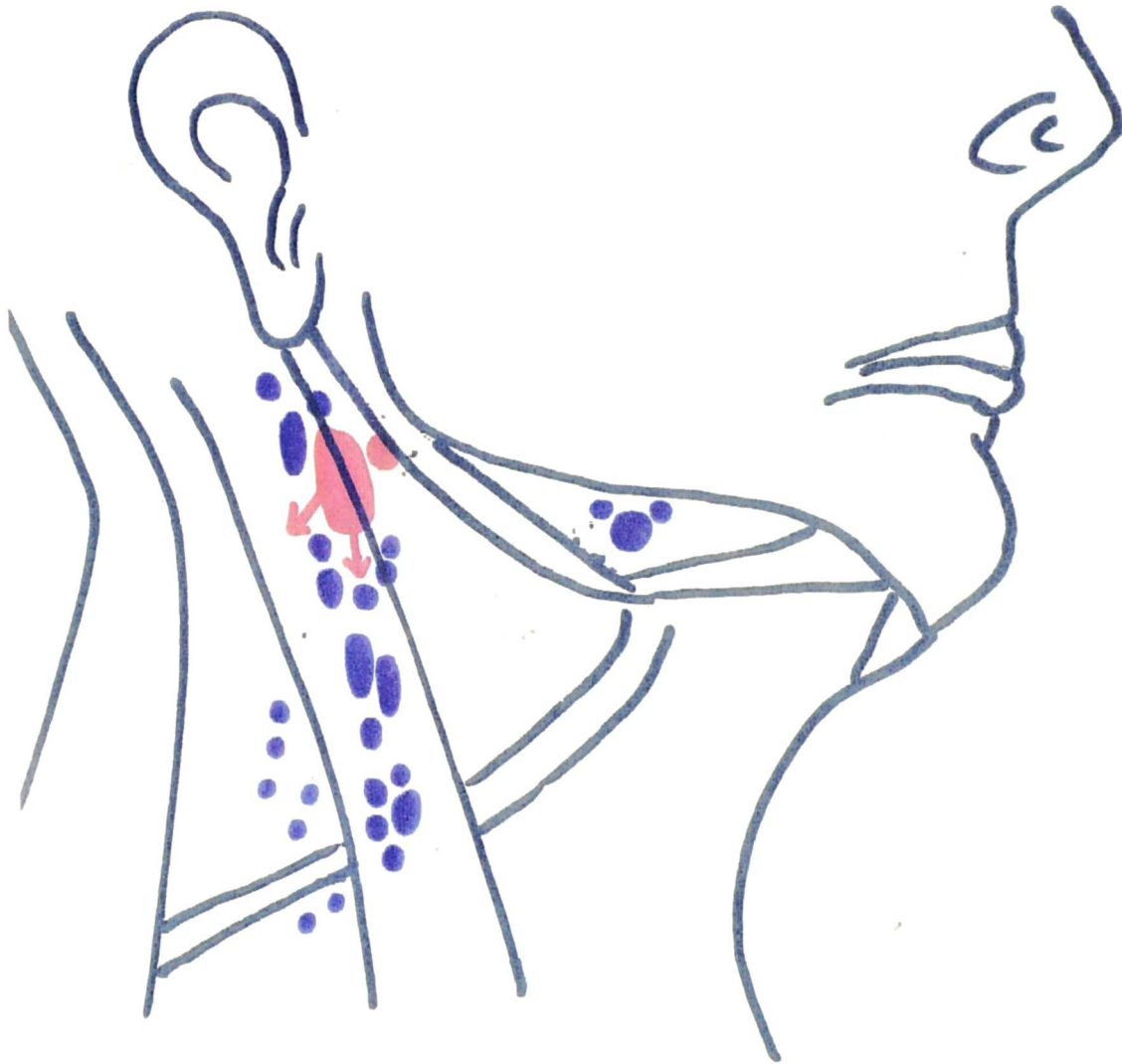
HISTOLOGICAL ASSESSMENT OF EXTRACAPSULAR SPREAD: MICROSCOPIC EXTRACAPSULAR SPREAD TO PERINODAL TISSUES AND/OR ANATOMICAL STRUCTURES.



Small islands of tumour are seen infiltrating perinodal fibro-adipose tissue. Islands of tumour are seen, also, within the capsule and periphery of the node. Haematoxylin and eosin. Original magnification, x40.

Figure 4.4a

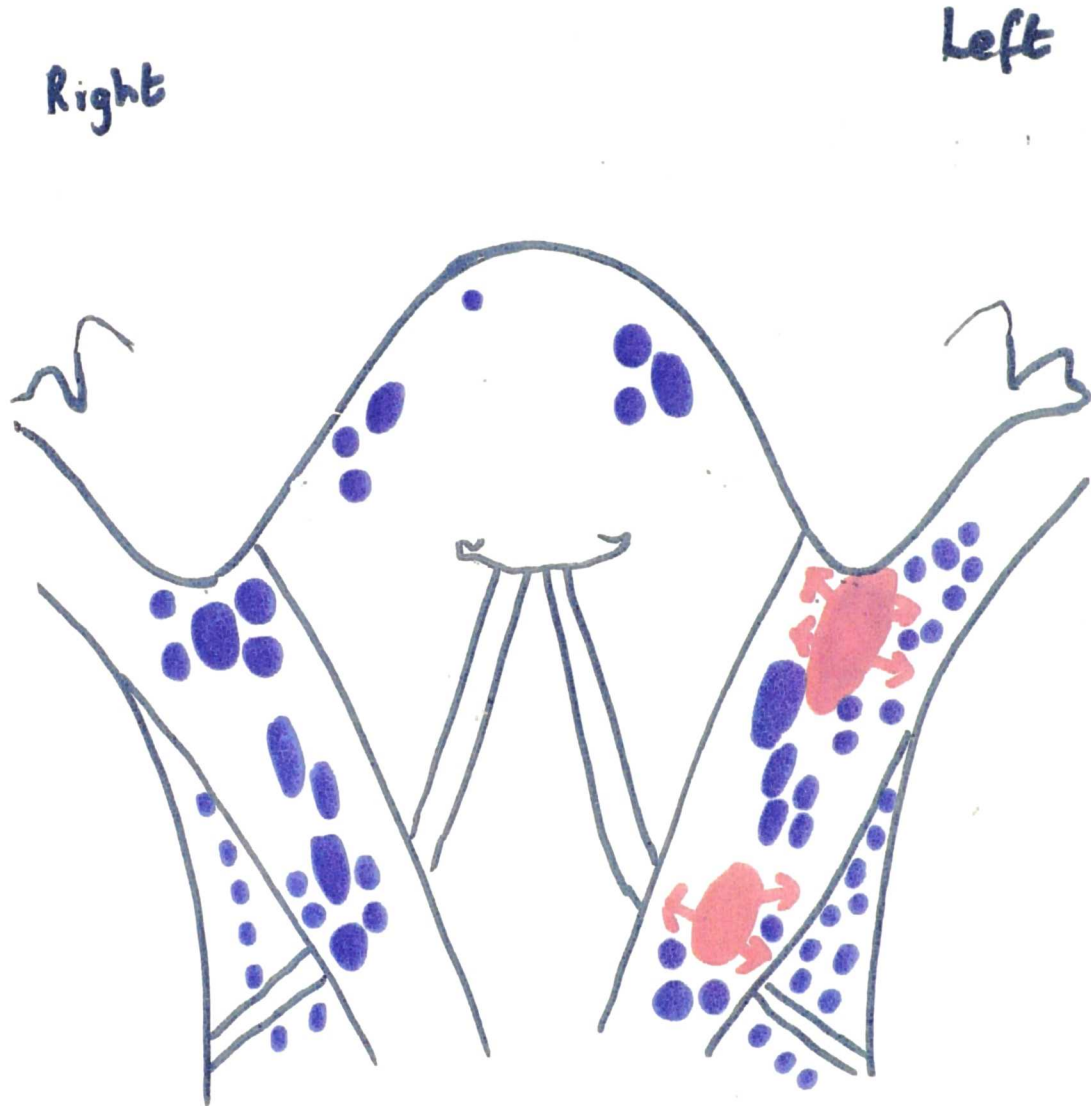
TOPOGRAPHICAL DEPICTION OF THE PATHOLOGICAL FINDINGS IN A UNILATERAL NECK DISSECTION SPECIMEN.



Metastatic carcinoma is present in two nodes (indicated in red) at level II (superior cervical). Extracapsular spread (indicated by red arrows) is present in relation to the larger positive node. The size and position of 26 negative nodes is indicated in blue.

Figure 4.4b

TOPOGRAPHICAL DEPICTION OF THE PATHOLOGICAL FINDINGS IN A BILATERAL NECK DISSECTION SPECIMEN.



On the left, metastatic masses (indicated in red) are present at levels II and IV (superior and inferior cervical, respectively). The arrows indicate extracapsular spread. The size and position of 34 negative nodes is indicated in blue.

On the right, there was no evidence of metastasis. The size and position of 24 negative nodes is indicated in blue.

Figure 4.5

NUMBER AND ANATOMICAL LEVEL OF METASTATIC DEPOSITS^a IN EIGHTEEN UNILATERAL PROCEDURE PATIENTS.

Case ND	T Site	T Stage	Anatomical Level					
			I	II	III	IV	V	
			+	+	+	+	+	+
2	Buccal Mucosa	T2	—					
5	Buccal Mucosa	T2	==					
125	Buccal Mucosa	T4	===					
			+	+	+	+	+	+
9	Oral Tongue	T1			—	—		
122	Oral Tongue	T1		—	—			
31	Oral Tongue	T2	—					
120	Oral Tongue	T2	—	==	—			
129	Oral Tongue	T2		—				
144	Oral Tongue	T2	—	—	—			
39	Oral Tongue	T3		==	—	—		
52	Oral Tongue	T3		—		—		
110	Oral Tongue	T4	—	—	—	—	==	==
			+	+	+	+	+	+
111	Floor of Mouth	T2		==				
135	Floor of Mouth	T2		==	—	—	—	
51	Floor of Mouth	T4		—				
96	Floor of Mouth	T4	—	—				
109	Floor of Mouth	T4		—				
			+	+	+	+	+	+
108	Oropharynx	T4		==	—	==	==	==

^a Positive discrete lymph nodes are indicated in red. Metastatic masses are indicated in black.

Figure 4.6

NUMBER AND ANATOMICAL LEVEL OF METASTATIC DEPOSITS^a IN THIRTEEN BILATERAL PROCEDURE PATIENTS.

Case ND	T Site ^b /Stage	Right Neck					Left Neck					
		V	IV	III	II	I	I	II	III	IV	V	
		+	+	+	+	+	++	+	+	+	+	+
64/63	To T2				—	—						
113/112	To T2						==					
153/152	To T2						==					
		+	+	+	+	+	++	+	+	+	+	+
84/83	FOM T1					—						
107/106	FOM T1					—	==					
118/117	FOM T1					—						
115/114	FOM T2					—	==	—	—			
137/136	FOM T2							—				
73/72	FOM T4							—		—		
95/94	FOM T4						—					
		+	+	+	+	+	++	+	+	+	+	+
142/141	Orop T1				—			—				
159/158	Orop T3							—				
157/156	Orop T4				==							
		+	+	+	+	+	++	+	+	+	+	+

^a Positive discrete lymph nodes are indicated in red. Metastatic masses of fused nodes are indicated in black.

^b To = Oral tongue, FOM = Floor of mouth, Orop = Oropharynx.

Figure 4.7

PREVALENCE OF METASTASIS AT DIFFERENT ANATOMICAL LEVELS IN THIRTY-FOUR SIDES OF NECK DISSECTION.

Number (percentage) of Dissections	Metastatic Deposits at Anatomical Level				
	I	II	III	IV	V
	+	+	+	+	+
12 (35%)	+ + + + + + + + +	+ + + + + +			
9 (26%)		+ + + + +			
2 (6%)	+ +	+ +			
3 (9%)	+ +	+ +	+ +		
1 (3%)	+		+	+	+
1 (3%)		+	+		
2 (6%)		+ +		+ +	
1 (3%)		+	+	+	
2 (6%)		+ +	+ +	+ +	+ +
1 (3%)			+	+	
	+	+	+	+	+

NUMBER OF METASTATIC DEPOSITS PER DISSECTION IN THIRTY-FOUR SIDES OF NECK DISSECTION.

Fig 4.8

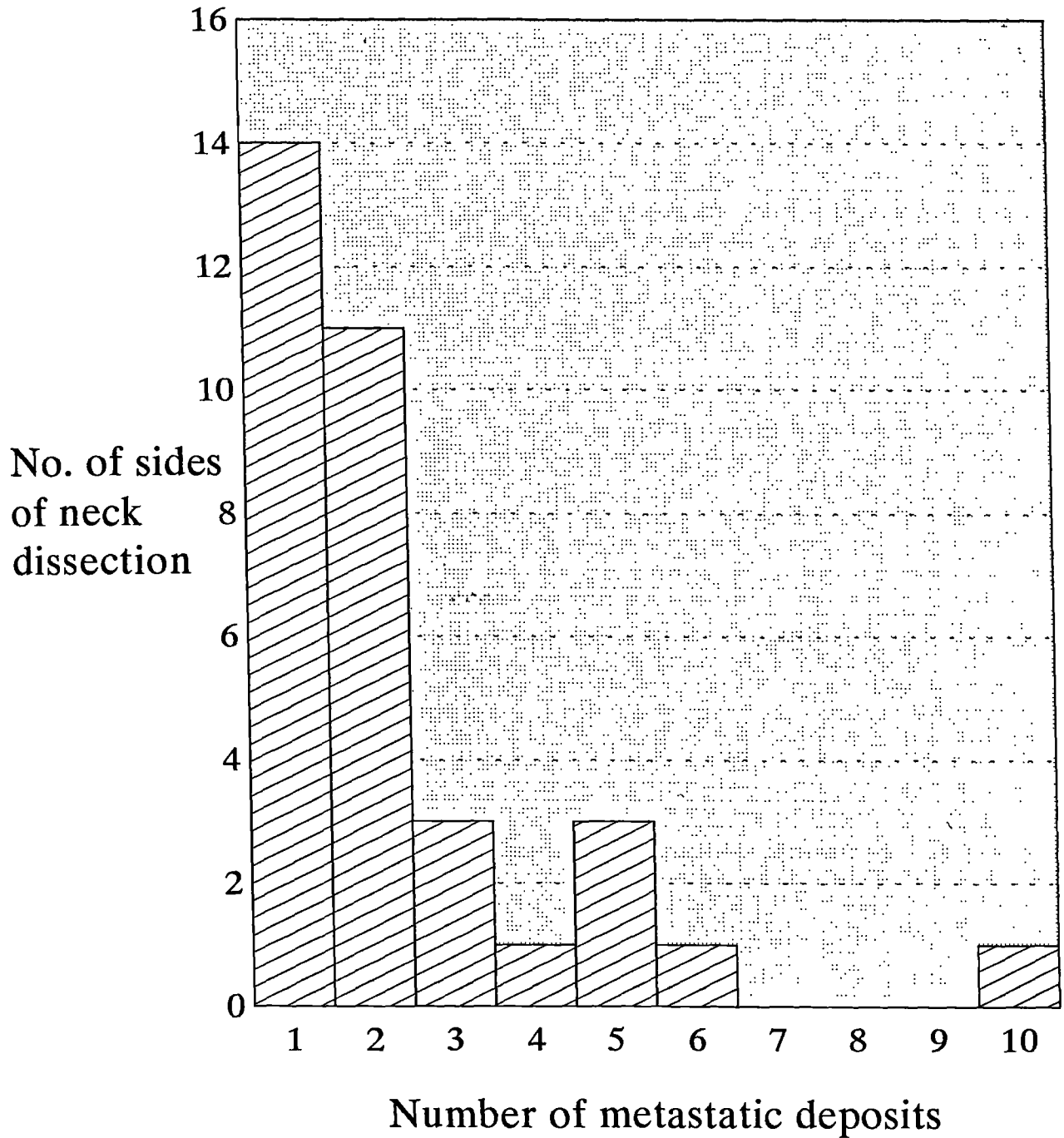


Figure 4.9a

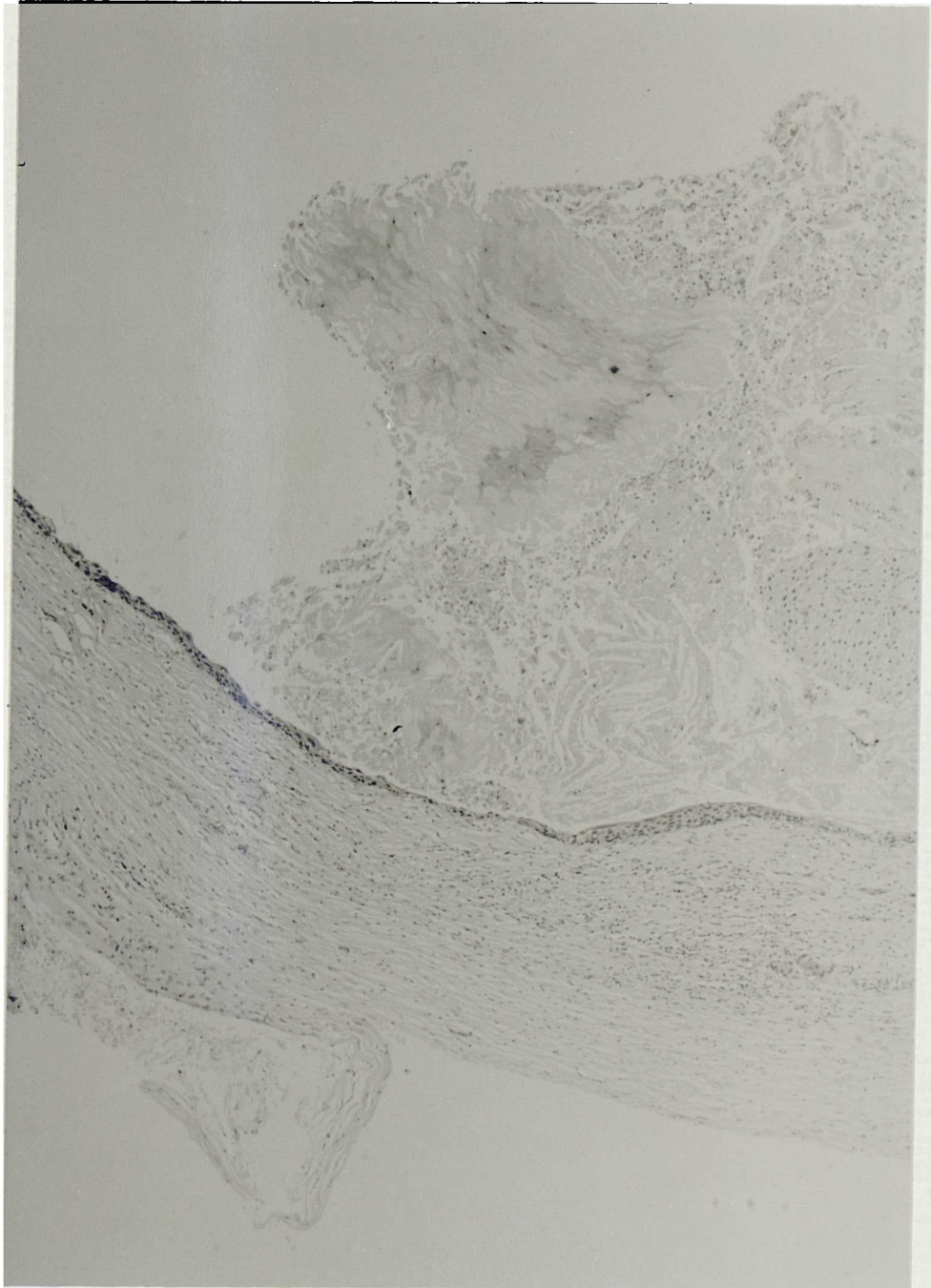
METASTATIC MASS SHOWING MACROSCOPIC CYSTIC CHANGE.



A metastatic mass (measuring 4.0cm.), formed by fusion of three nodes. The central lumen, which occupied one half of the mass, contained gelatinous material. Solid parts of the mass are projecting into the lumen.

Figure 4.9b

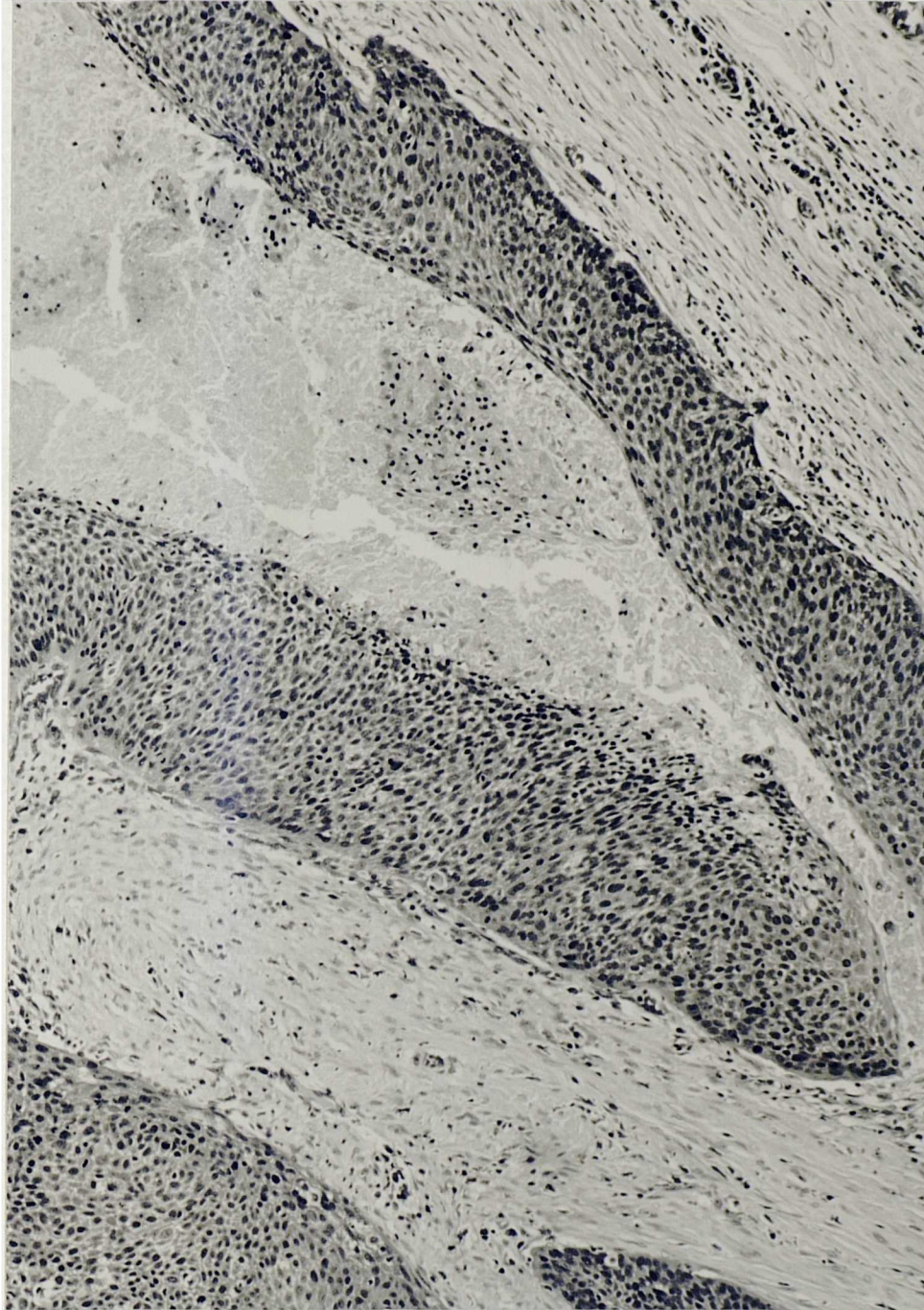
CYSTIC METASTATIC MASS: MICROSCOPIC APPEARANCE OF CYST LINING.



The wall of the cyst is lined, in part, by a thin layer of epithelium. The lumen contained, mainly, necrotic debris. Haematoxylin and eosin. Original magnification, x40.

Figure 4.10

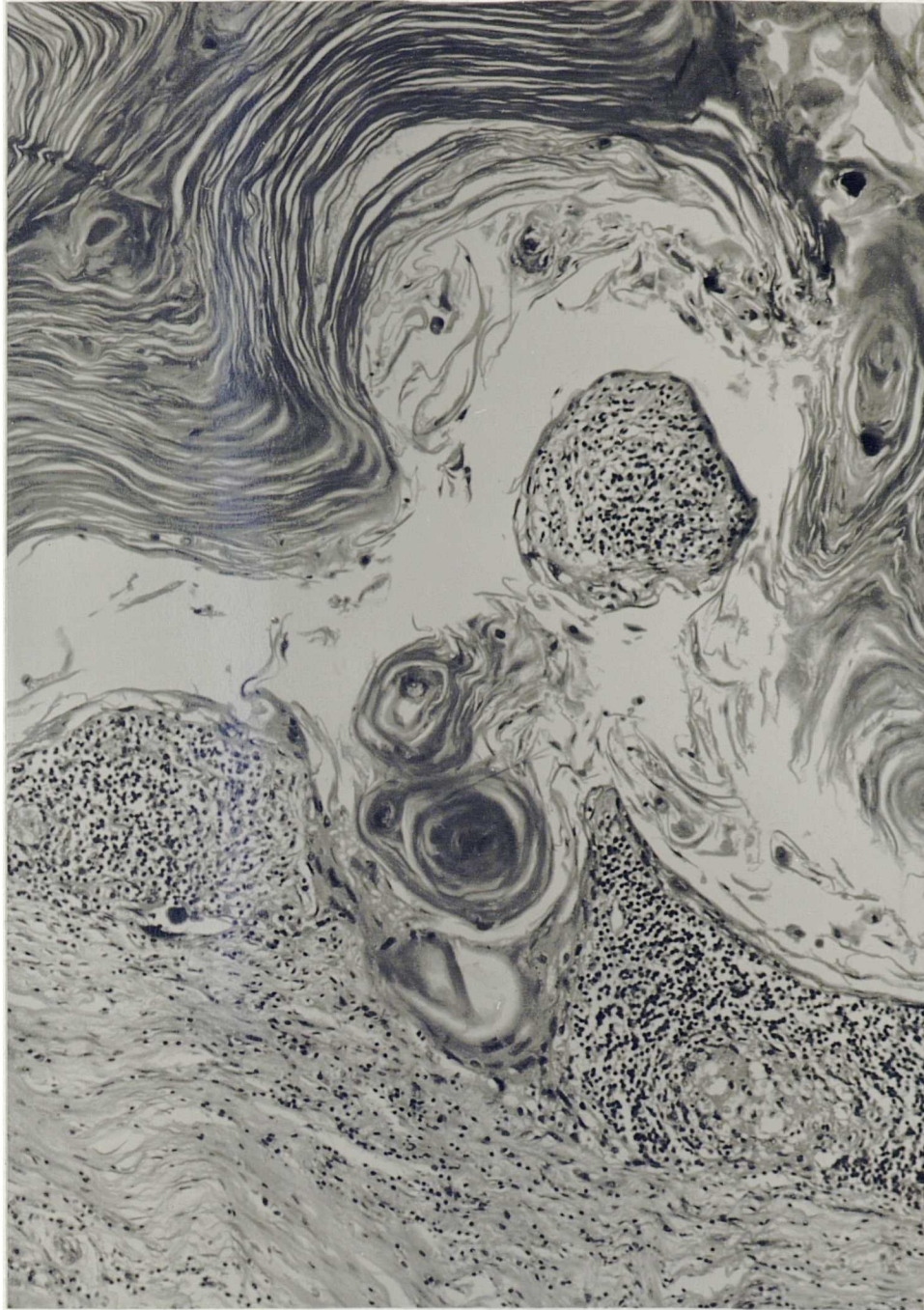
CYSTIC METASTATIC MASS: TRANSITIONAL-TYPE EPITHELIAL LINING.



The papillary processes are lined by multiple layers of non-keratinising cells. These are orientated towards the surface, thus creating the appearances of transitional-type epithelium. Haematoxylin and eosin. Original magnification, x40.

Figure 4.11

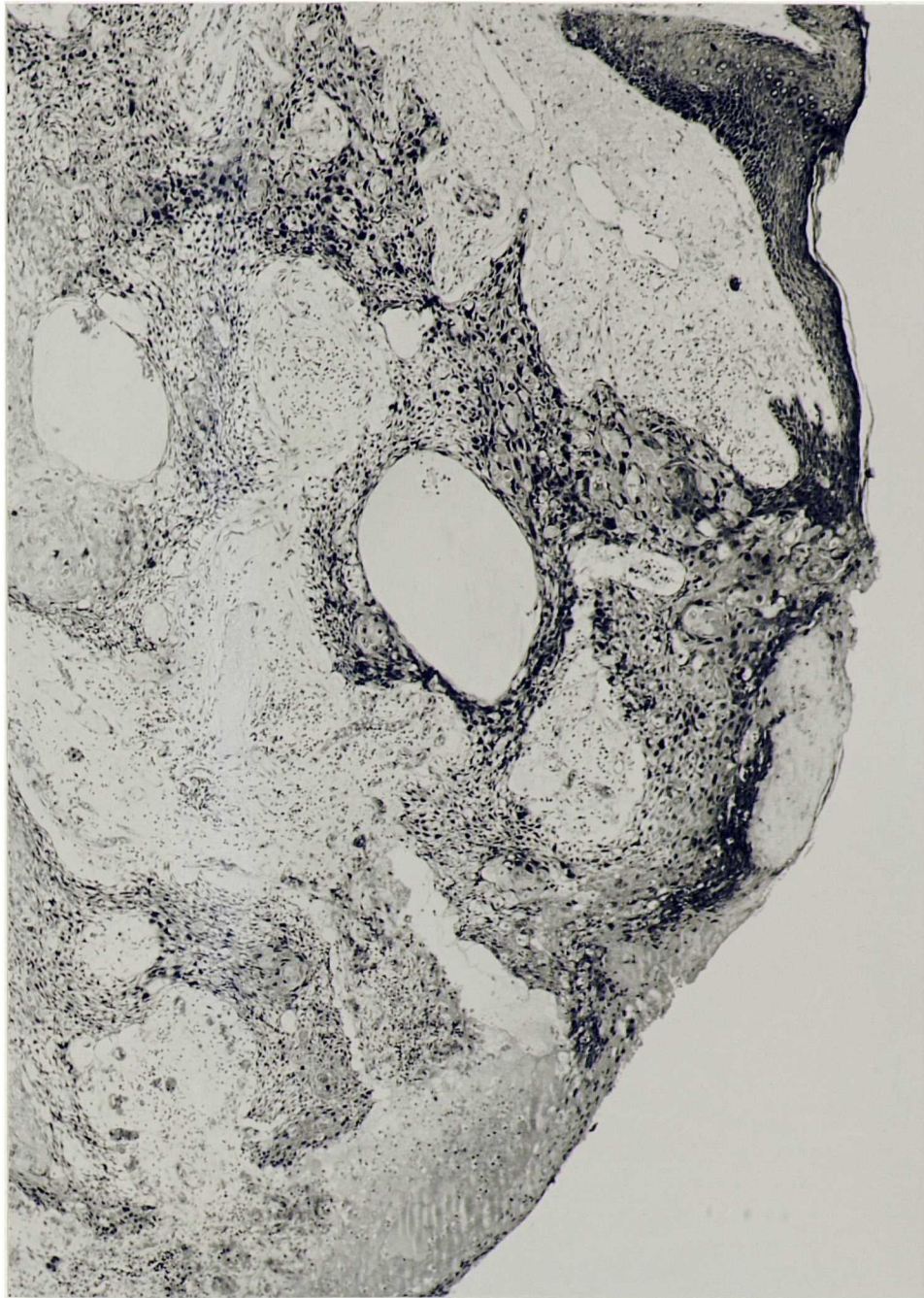
CYSTIC METASTATIC LYMPH NODE: MICROSCOPIC APPEARANCE.



The lumen is full of keratin lamellae. A peripheral rim of lymphoid tissue is preserved and there is no extracapsular spread. Haematoxylin and eosin. Original magnification, x100.

Figure 4.12

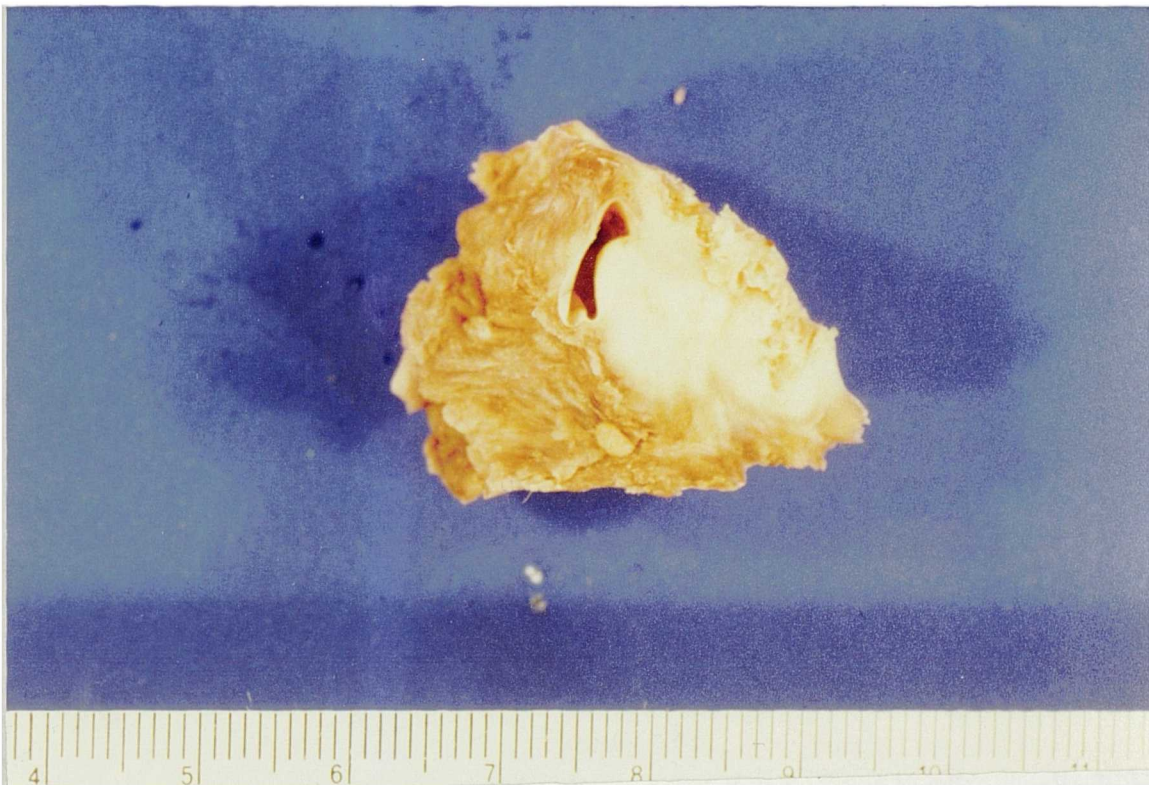
SPREAD OF METASTATIC CARCINOMA TO SUBCUTANEOUS TISSUES AND SKIN.



The epidermis is ulcerated with a fibrinous slough. Squamous cell carcinoma is extensively replacing the subcutaneous tissues. Haematoxylin and eosin. Original magnification, x40.

Figure 4.13a

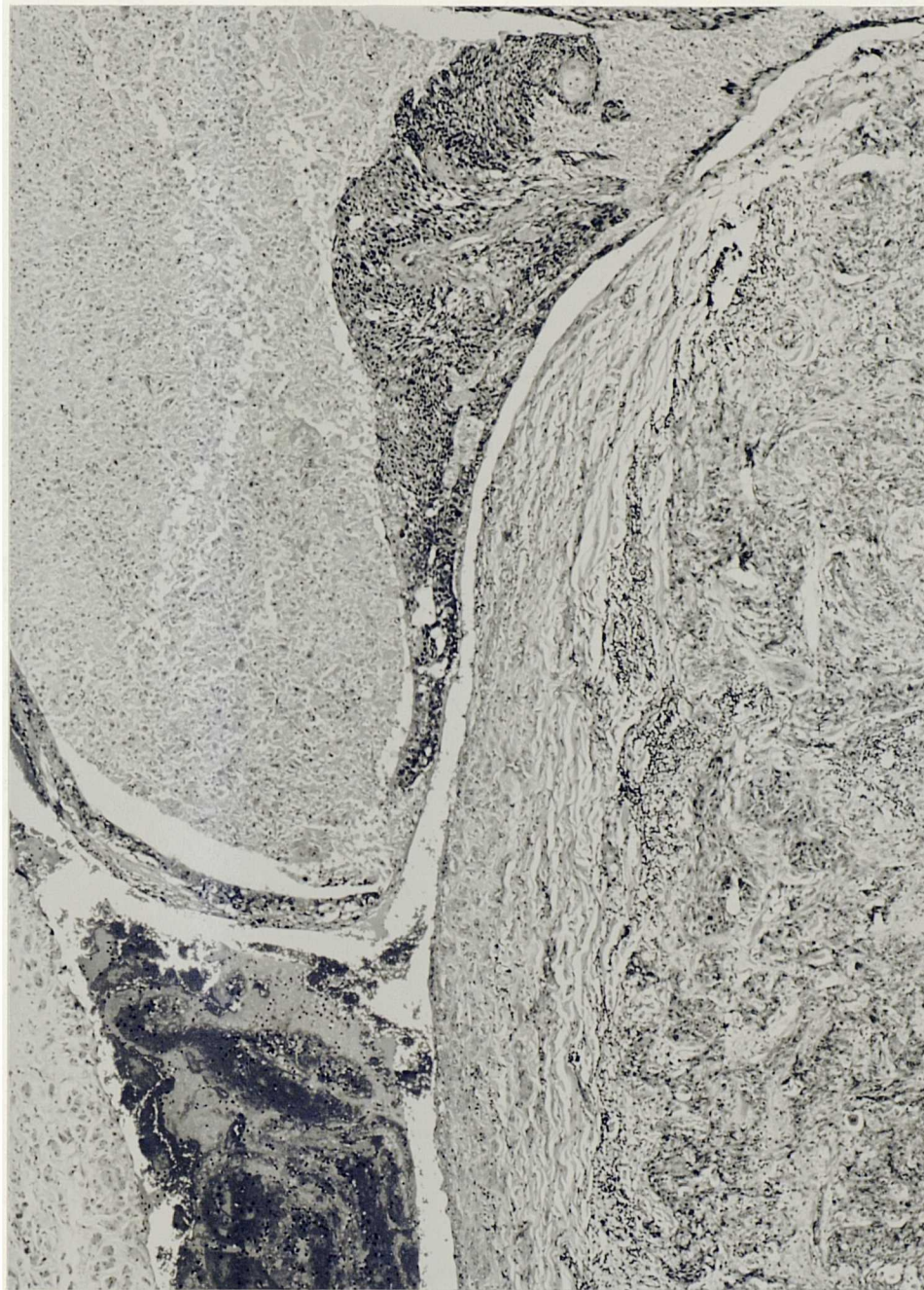
INVASION OF INTERNAL JUGULAR VEIN BY METASTATIC CARCINOMA: MACROSCOPIC APPEARANCE.



Tumour is spreading from a metastatic mass into the wall of the internal jugular vein.

Figure 4.13b

INVASION OF INTERNAL JUGULAR VEIN BY METASTATIC CARCINOMA: MICROSCOPIC APPEARANCE.



The lumen of the vein is occupied by a mass of tumour showing central necrosis. Squamous cell carcinoma has extensively involved the adventitia of the vein, and, in areas, breached the muscular media. Haematoxylin and eosin. Original magnification, x40.

Figure 5.1

ACCURACY OF THE CLINICAL ASSESSMENT OF THE METASTATIC STATUS OF CERVICAL NODES IN UNILATERAL NECK DISSECTION PATIENTS.

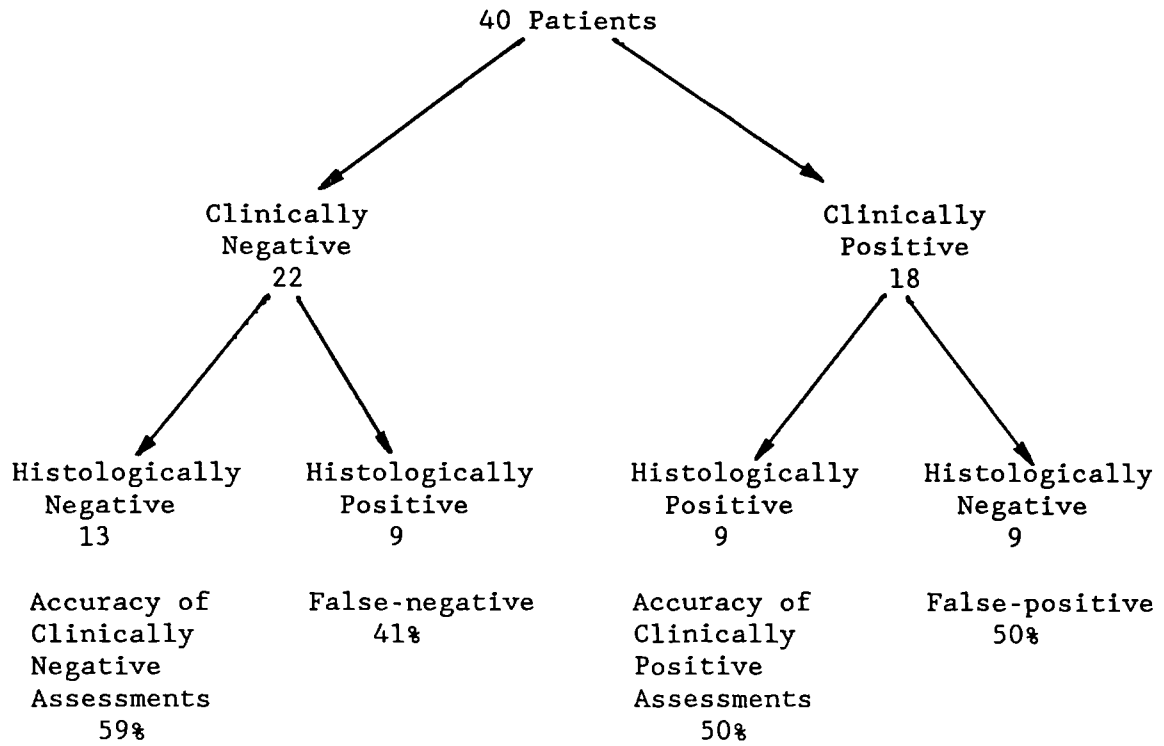


Figure 5.2

ACCURACY OF THE CLINICAL ASSESSMENT OF THE METASTATIC STATUS OF CERVICAL NODES IN BILATERAL NECK DISSECTION PATIENTS.

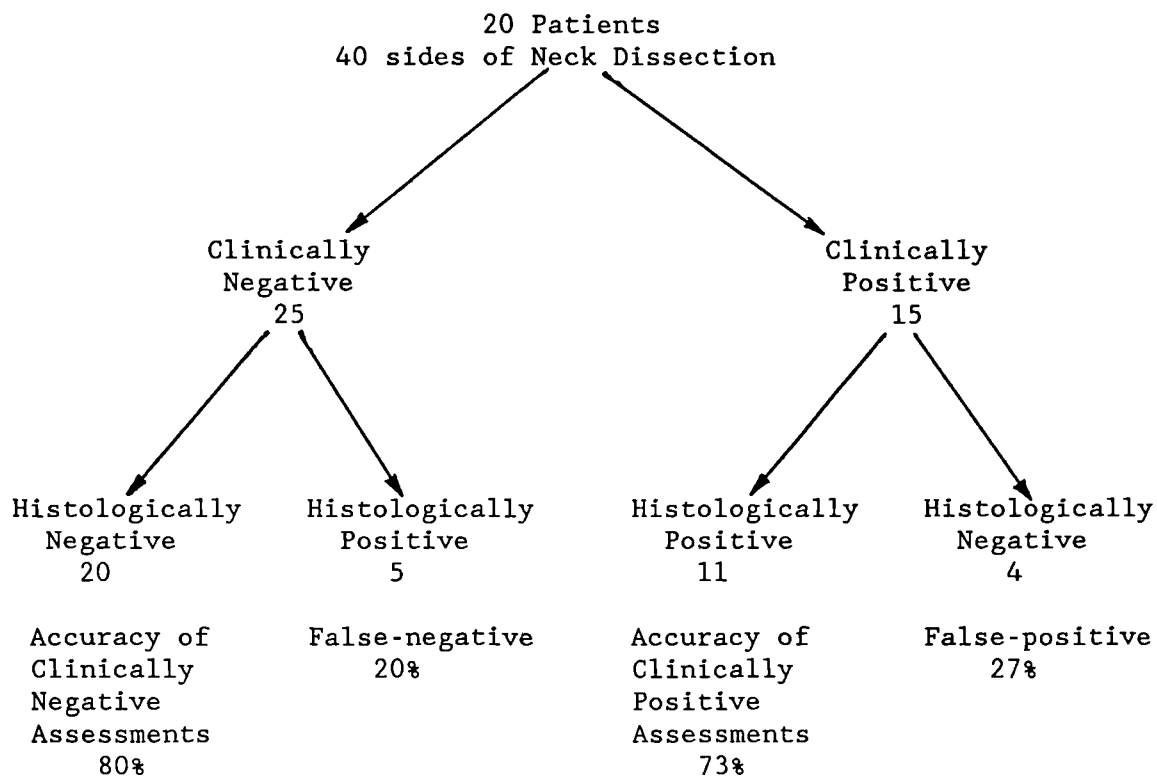


Figure 5.3

ACCURACY OF THE CLINICAL ASSESSMENT OF THE METASTATIC STATUS OF CERVICAL NODES IN SIMULTANEOUS PROCEDURE NECK DISSECTION PATIENTS.

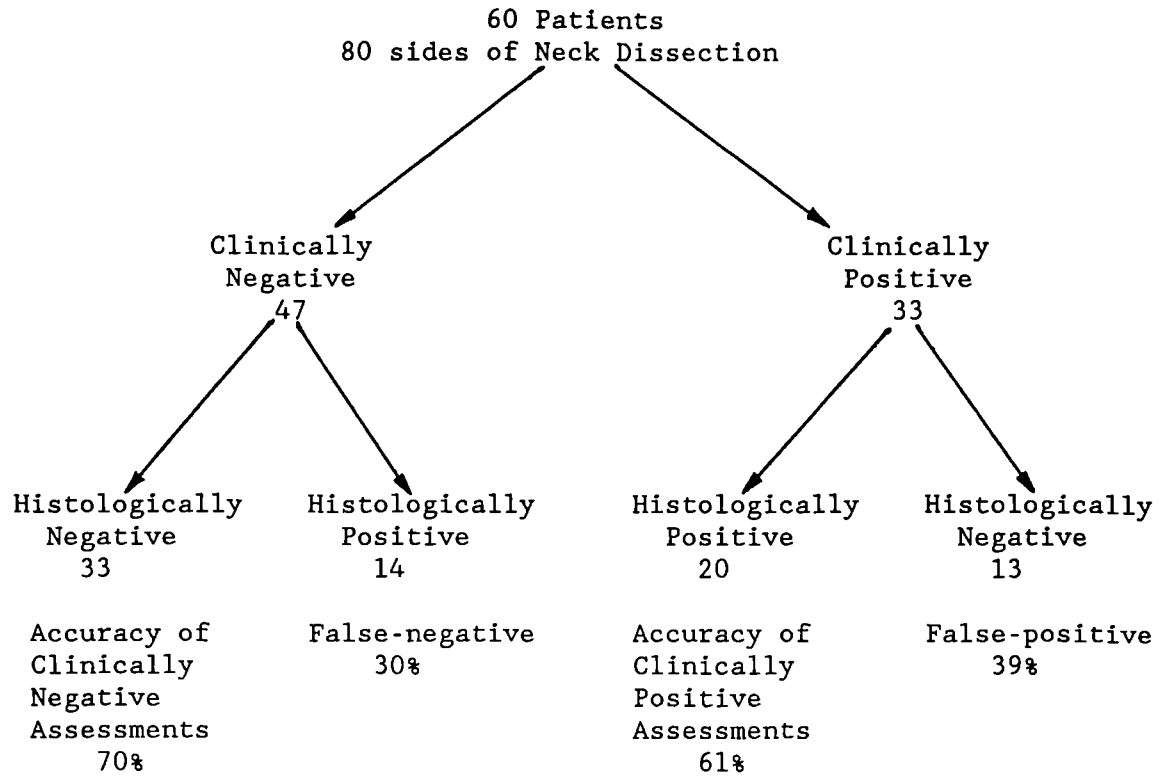
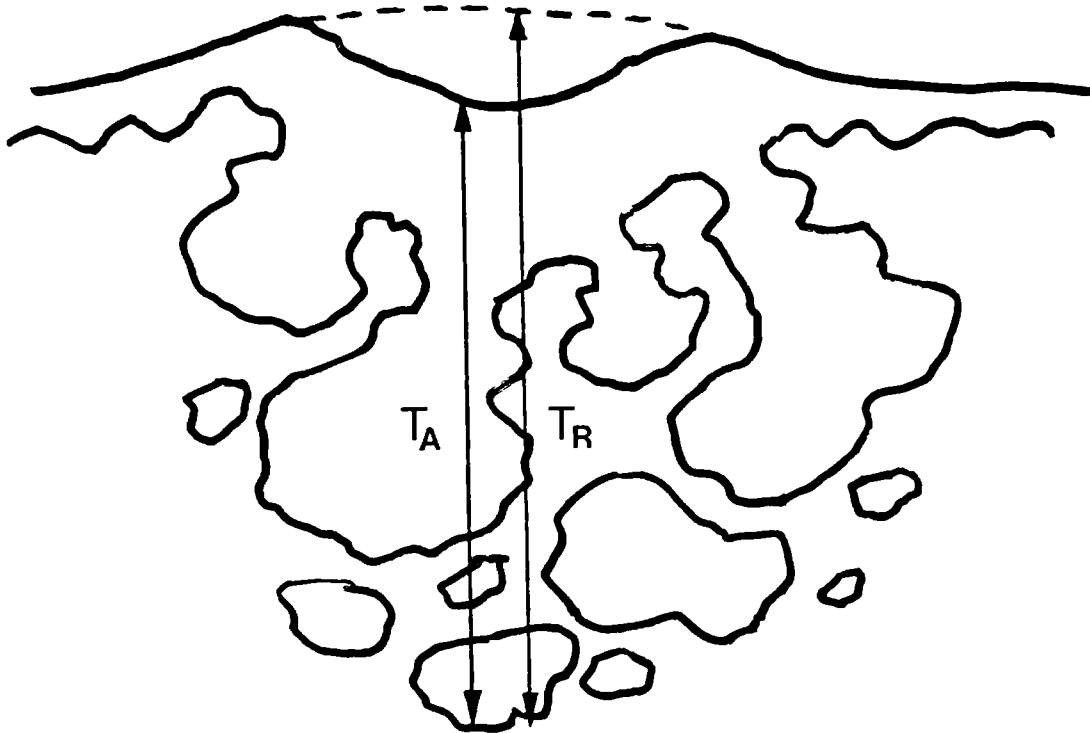


Figure 6.1a

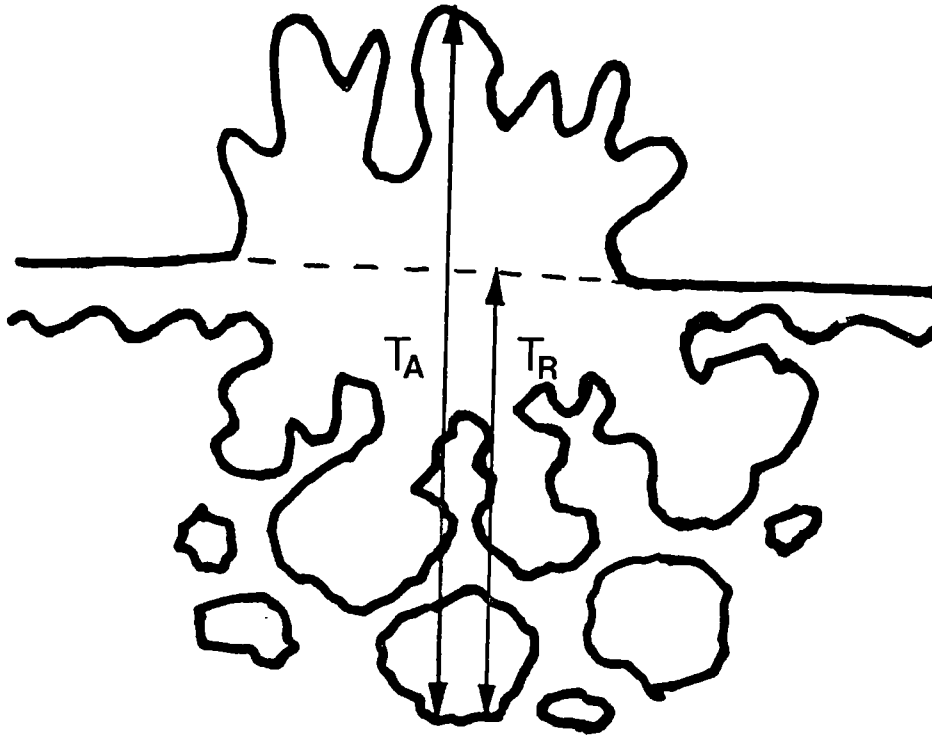
ACTUAL TUMOUR THICKNESS (T_A) AND RECONSTRUCTED TUMOUR THICKNESS (T_R)
IN AN ULCERATED, ENDOPHYTIC CARCINOMA.



The actual tumour thickness (T_A) was measured from the floor of the ulcer to the deepest extent of growth at the advancing tumour front. The reconstructed tumour thickness (T_R) was measured from a theoretically reconstructed normal mucosal line to the deepest extent of growth at the advancing tumour front.

Figure 6.1b

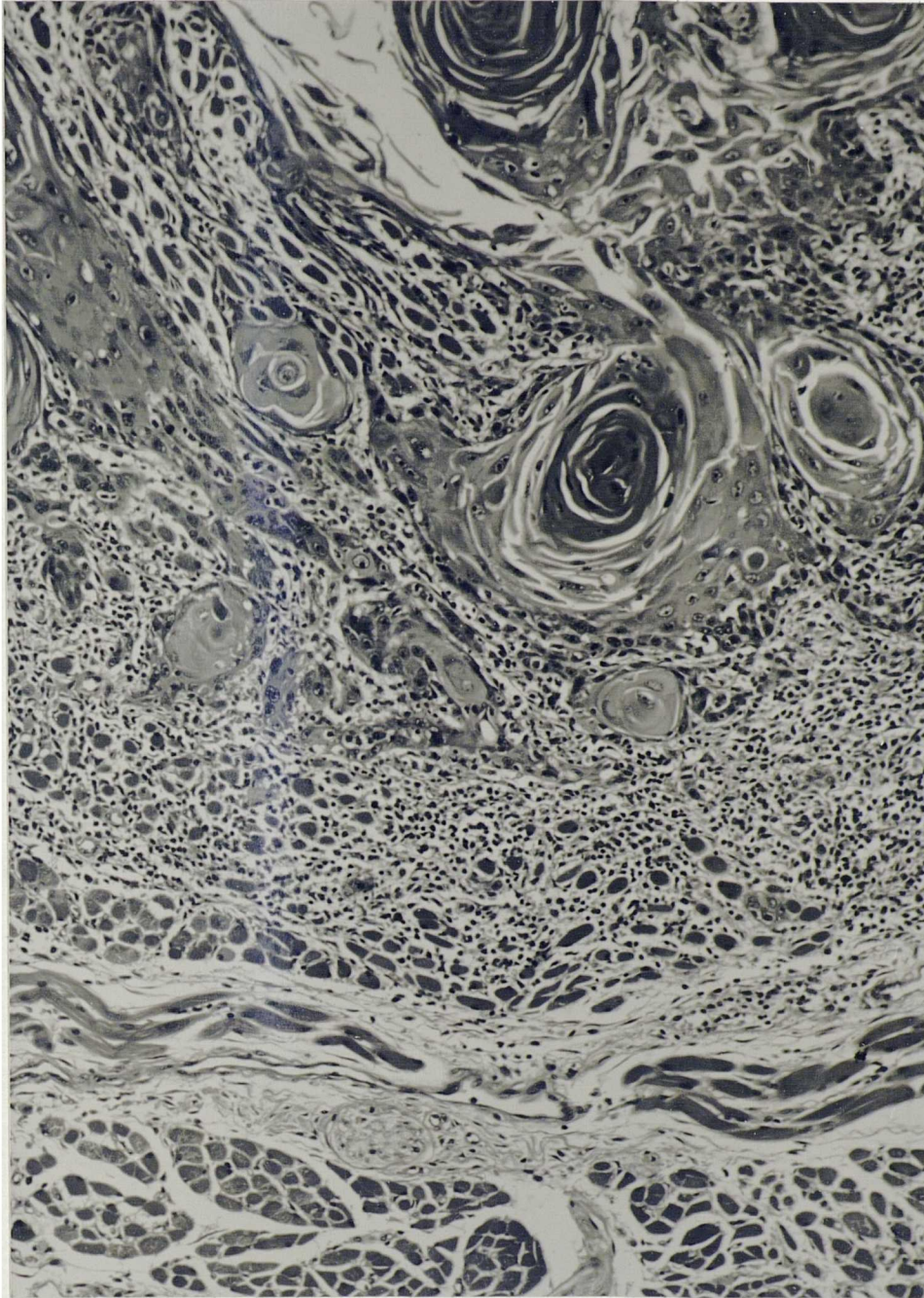
ACTUAL TUMOUR THICKNESS (T_A) AND RECONSTRUCTED TUMOUR THICKNESS (T_R)
IN AN EXOPHYTIC CARCINOMA.



The actual tumour thickness (T_A) was measured from the papillary surface (including the most superficial layer of keratinocytes with open nuclei) to the deepest extent of growth at the advancing tumour front. The reconstructed tumour thickness (T_R) was measured from a theoretically reconstructed normal mucosal line to the deepest extent of growth at the advancing tumour front.

Figure 6.2a

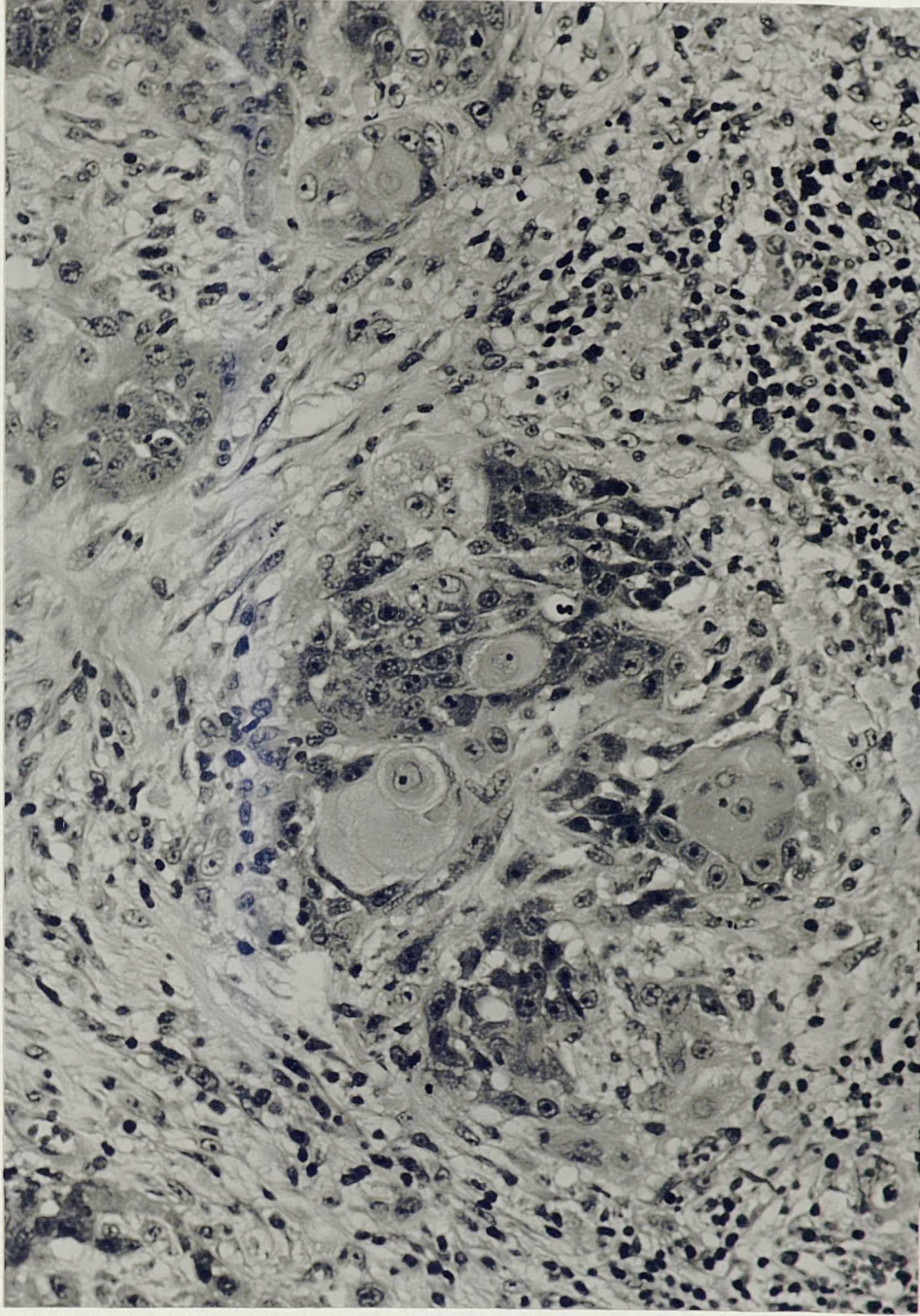
DEGREE OF KERATINISATION: GRADE 1.



Abundant well-formed keratin pearls are seen at the advancing front. Haematoxylin and eosin. Original magnification, x100.

Figure 6.2b

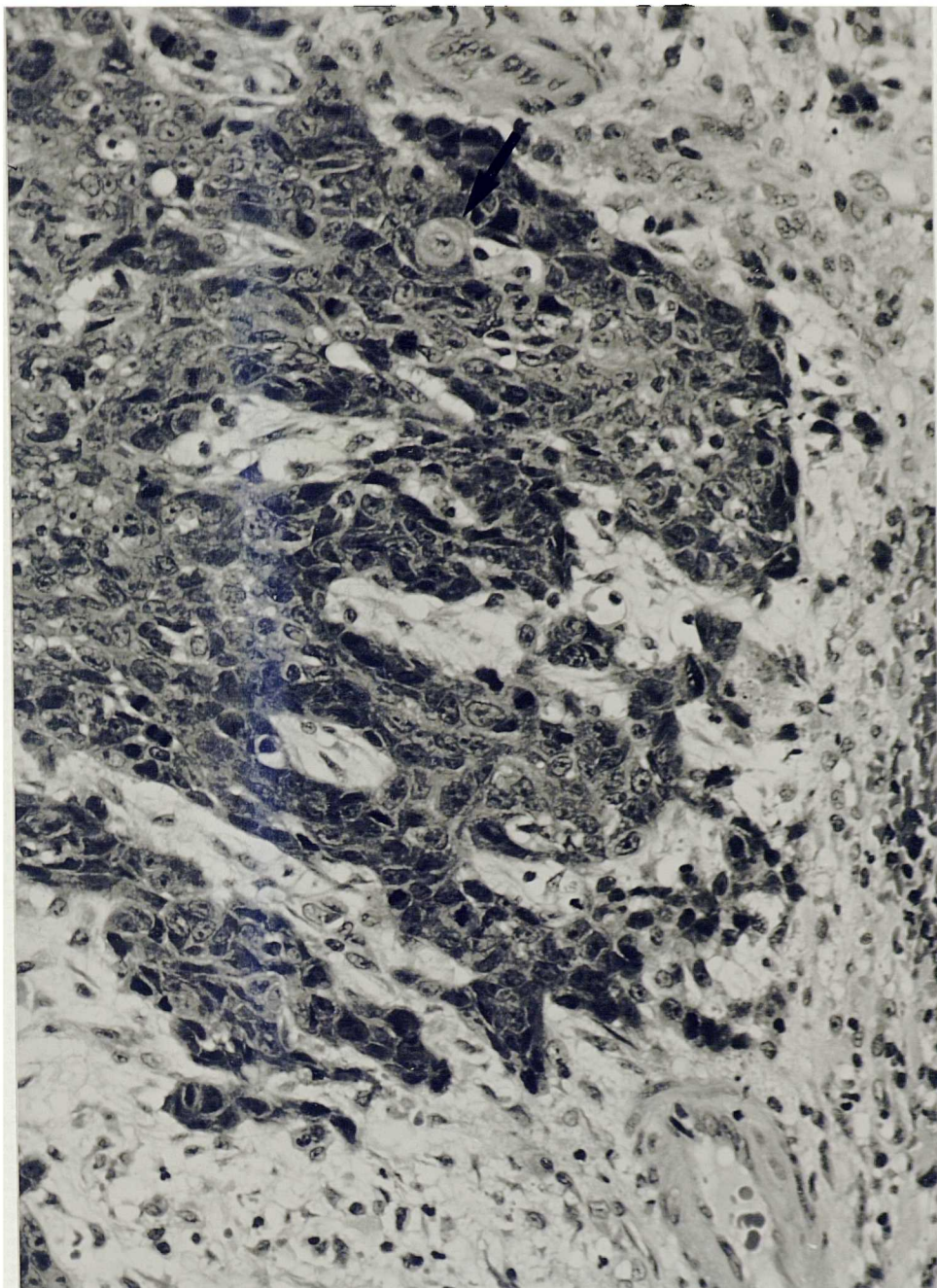
DEGREE OF KERATINISATION: GRADE 2.



Poorly-formed keratin pearls are seen at the advancing front. Haematoxylin and eosin. Original magnification, x200.

Figure 6.2c

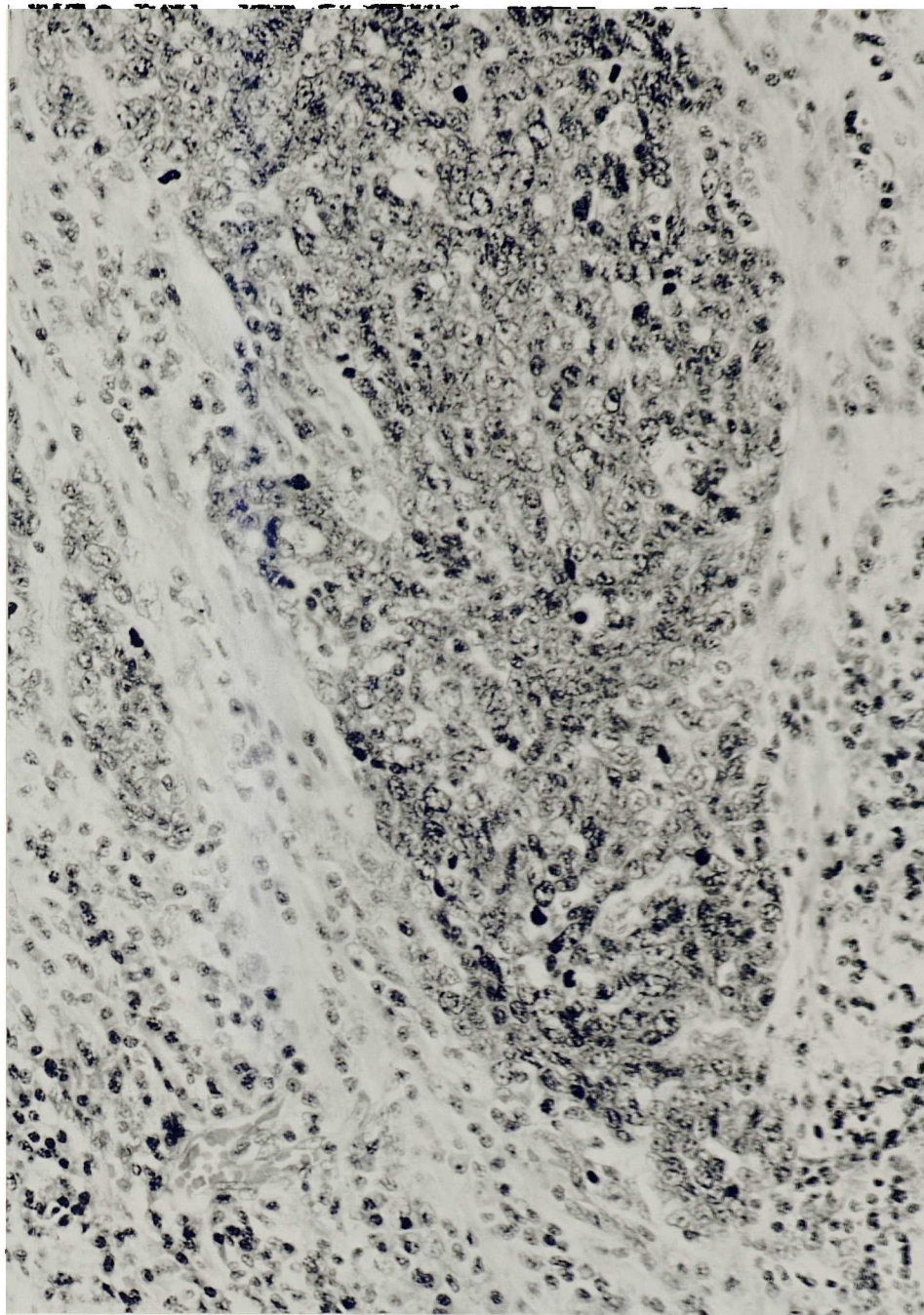
DEGREE OF KERATINISATION: GRADE 3.



At the advancing front, no keratin pearls are present, but keratin is seen within individual tumour cells (indicated by arrow). Haematoxylin and eosin. Original magnification, x200.

Figure 6.2d

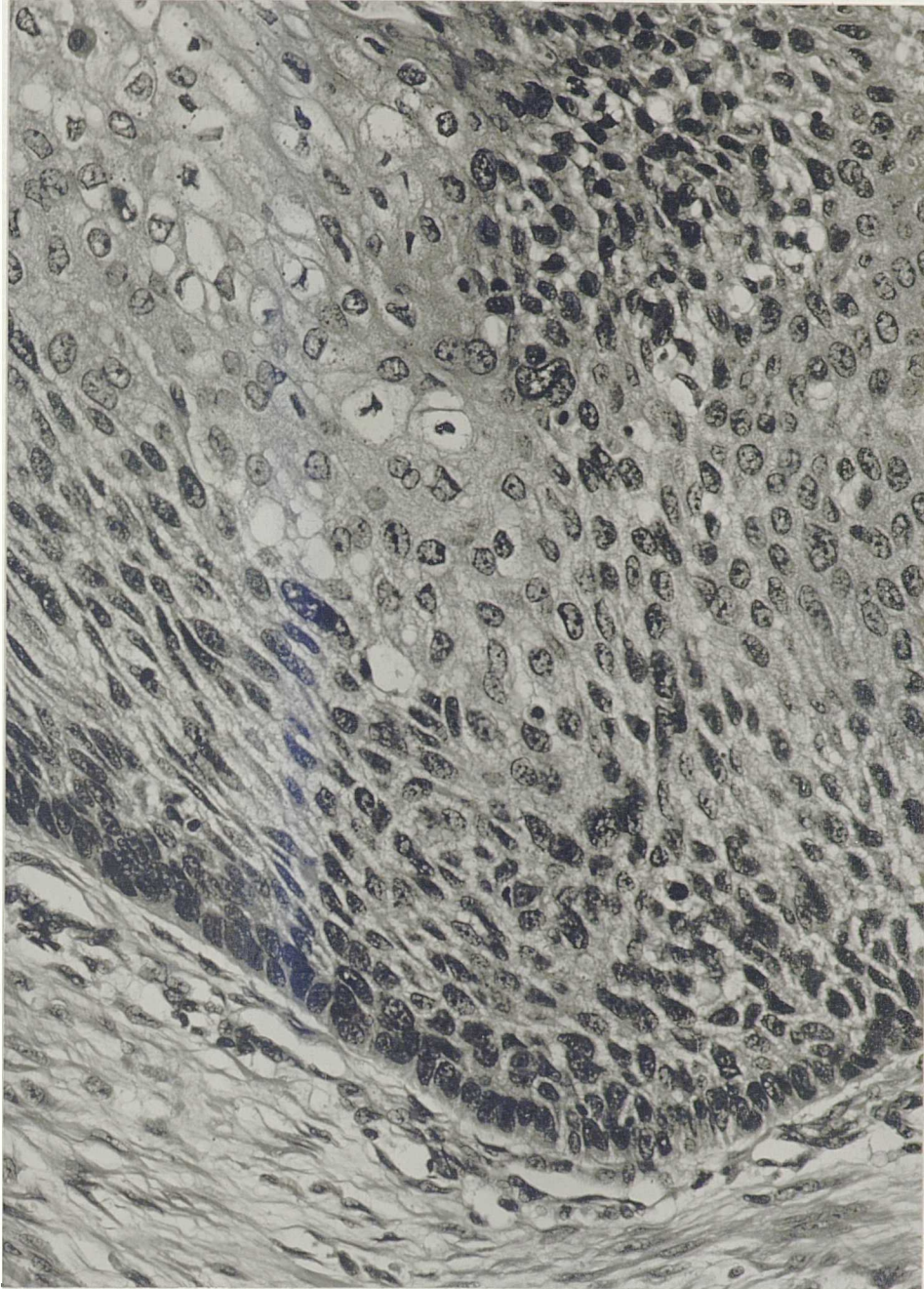
DEGREE OF KERATINISATION: GRADE 4.



Tumour cells at the advancing front show no evidence of keratinisation. Haematoxylin and eosin. Original magnification, x200.

Figure 6.3a

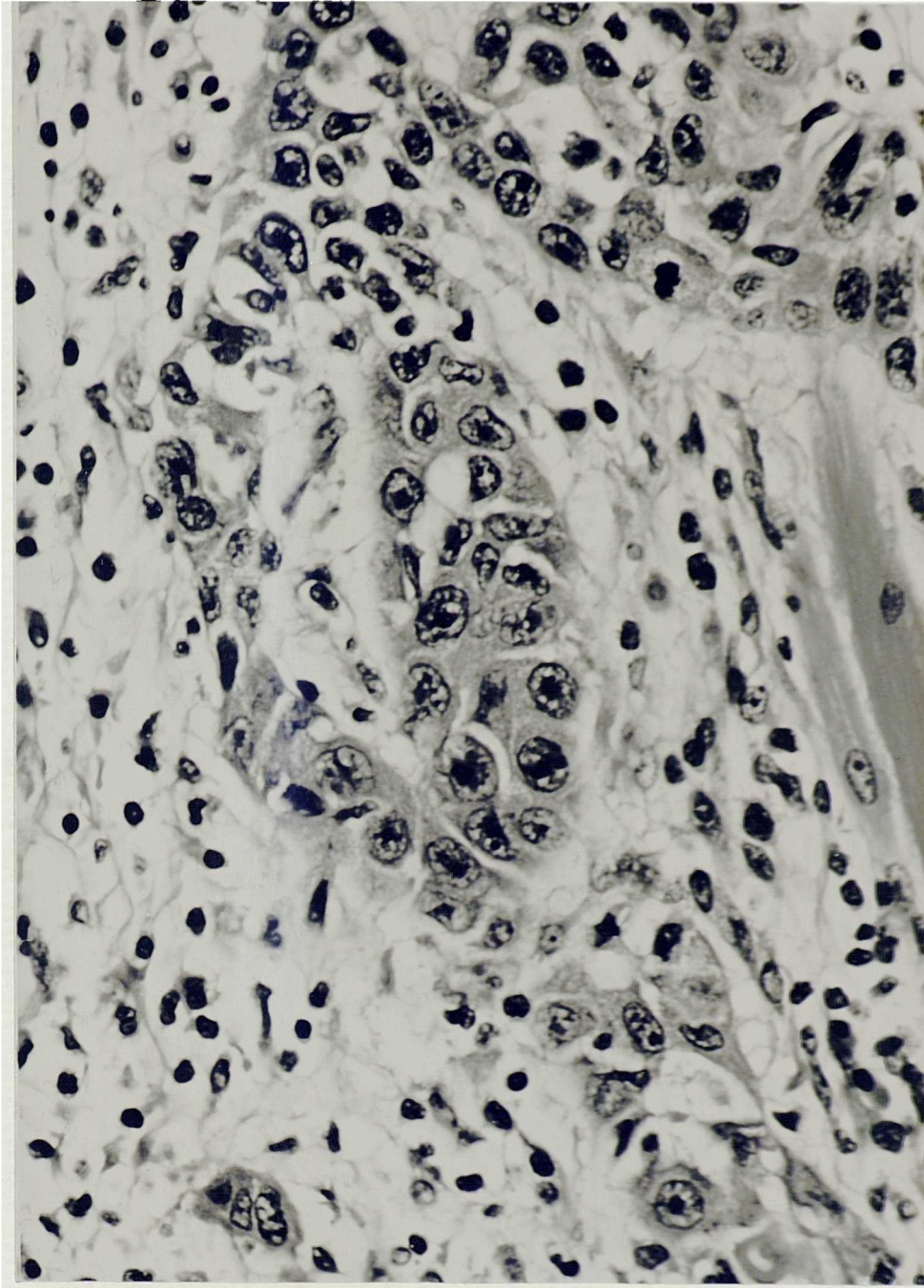
NUCLEAR POLYMORPHISM: GRADE 1.



The tumour cell nuclei at the advancing front are small, almost uniform in size, with minimal aberrations. Haematoxylin and eosin. Original magnification, x200.

Figure 6.3b

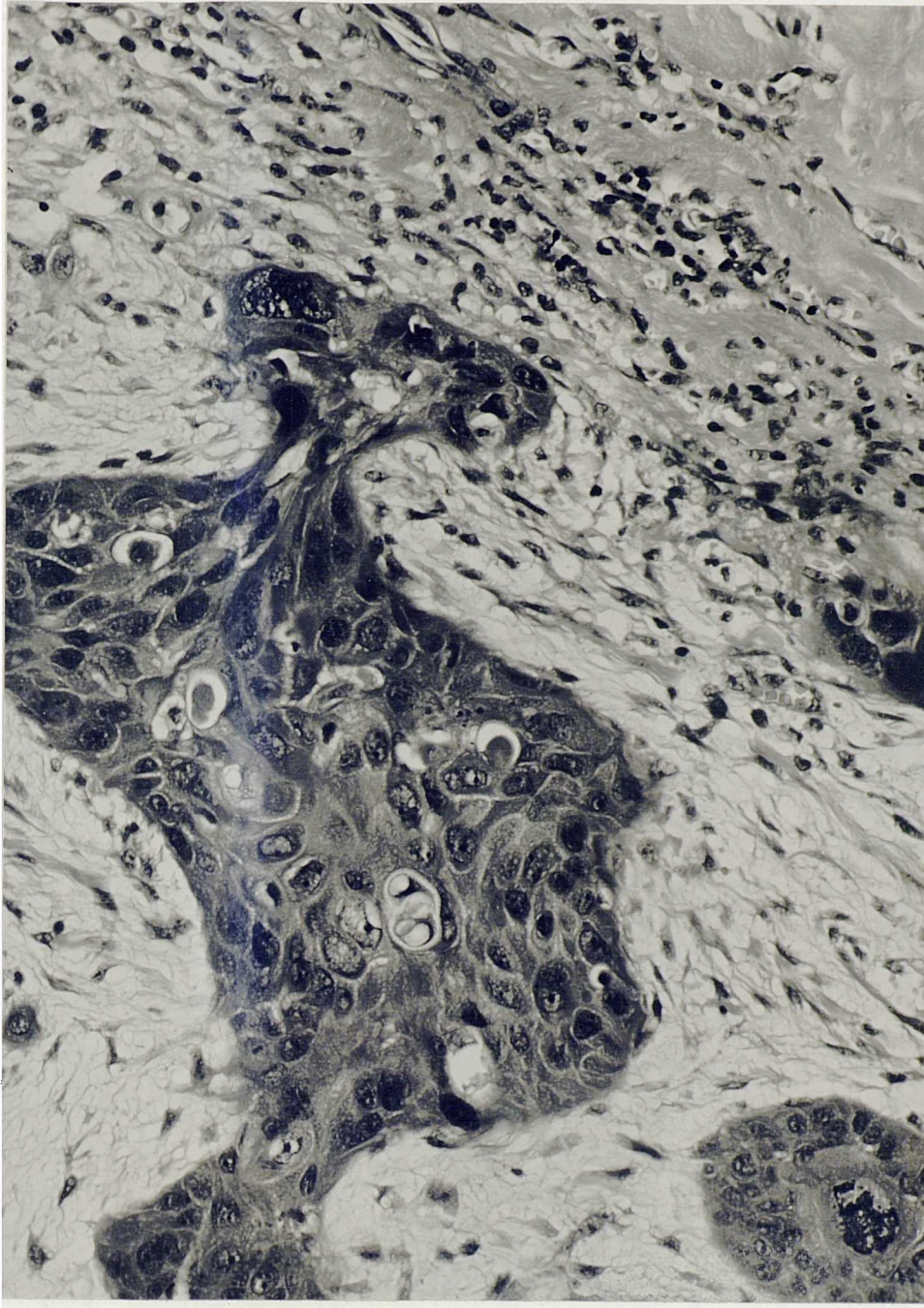
NUCLEAR POLYMORPHISM: GRADE 2.



Tumour cell nuclei at the advancing front are large, with distinct nucleoli. Multiple/large anaplastic nuclei are not detected. Haematoxylin and eosin. Original magnification, x400.

Figure 6.3c

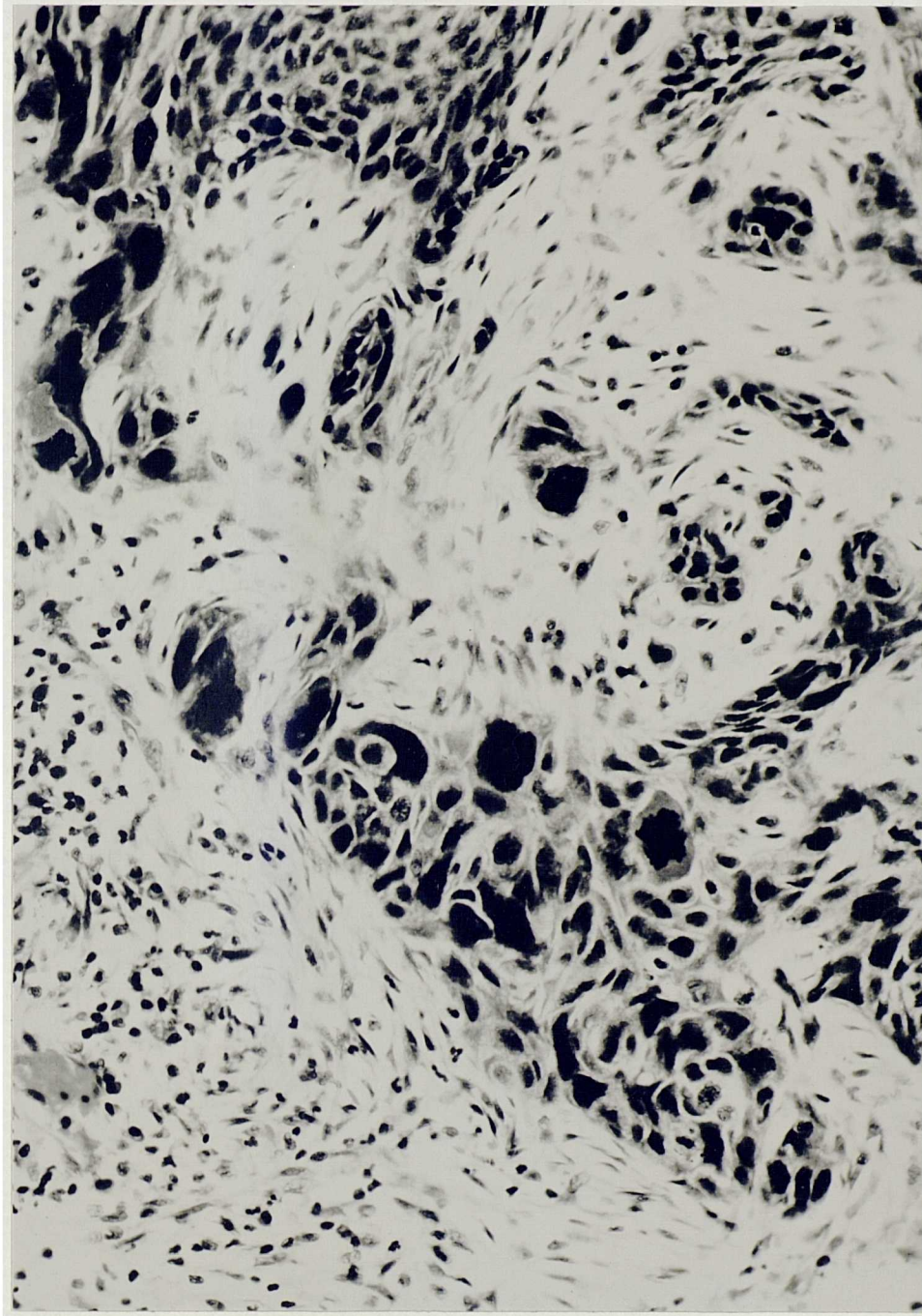
NUCLEAR POLYMORPHISM: GRADE 3.



Some tumour cells at the advancing front have large, anaplastic nuclei. Haematoxylin and eosin. Original magnification, x200.

Figure 6.3d

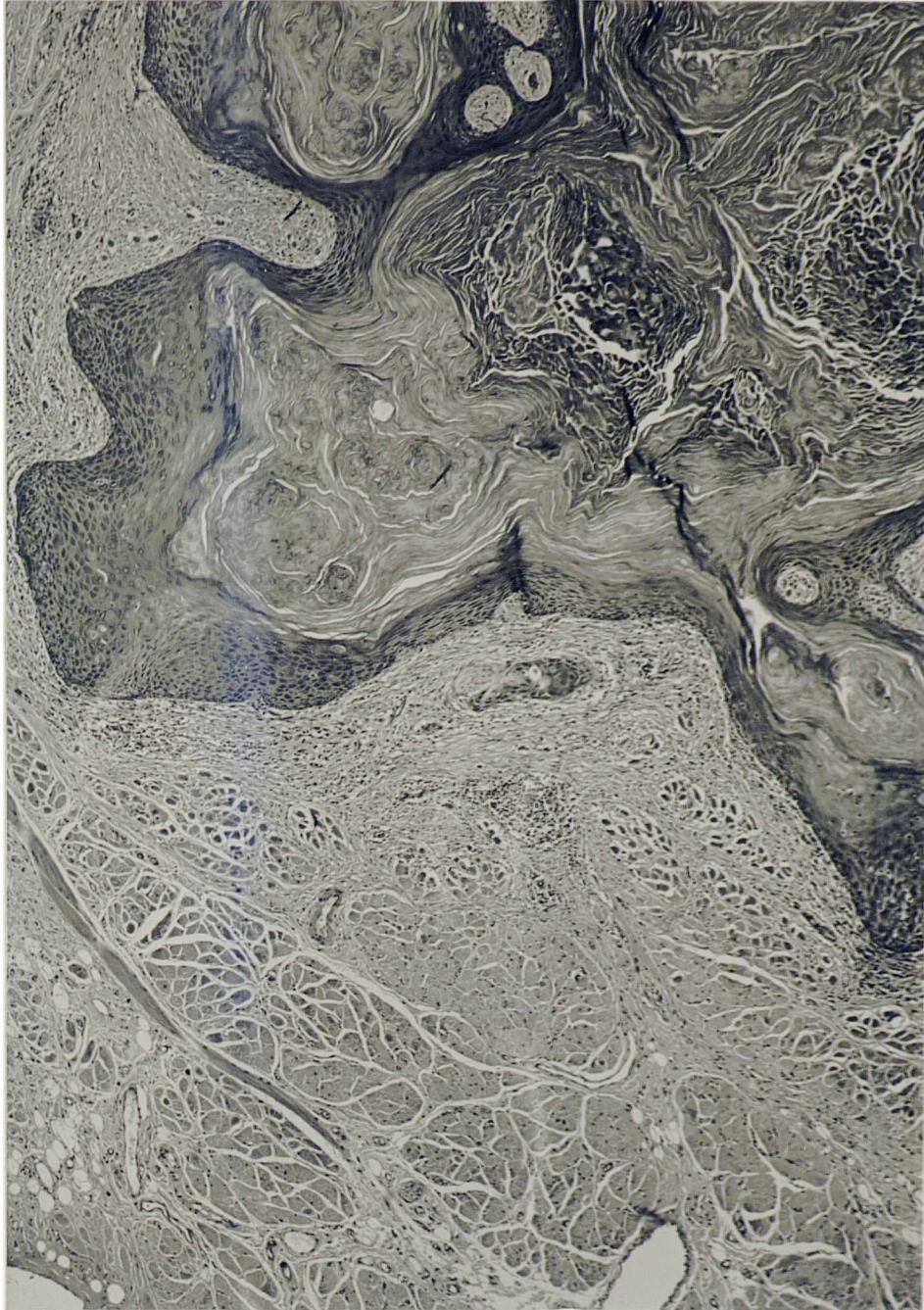
NUCLEAR POLYMORPHISM: GRADE 4.



Numerous tumour cells at the advancing front have large, anaplastic nuclei or atypical mitotic figures. Haematoxylin and eosin. Original magnification, x200.

Figure 6.4a

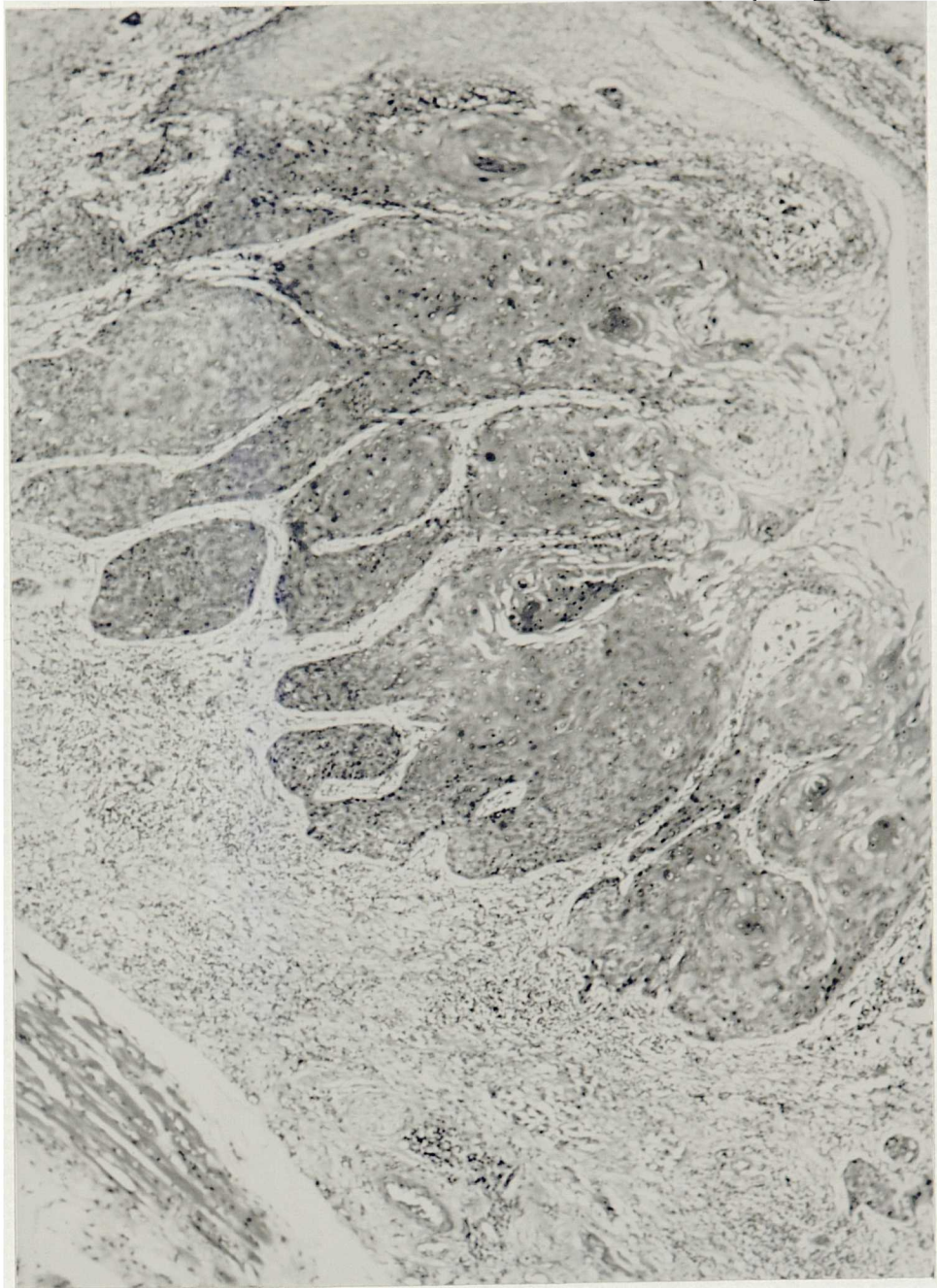
PATTERN OF INVASION: GRADE 1.



The tumour has a well-delineated, pushing border. Haematoxylin and eosin. Original magnification, x40.

Figure 6.4b

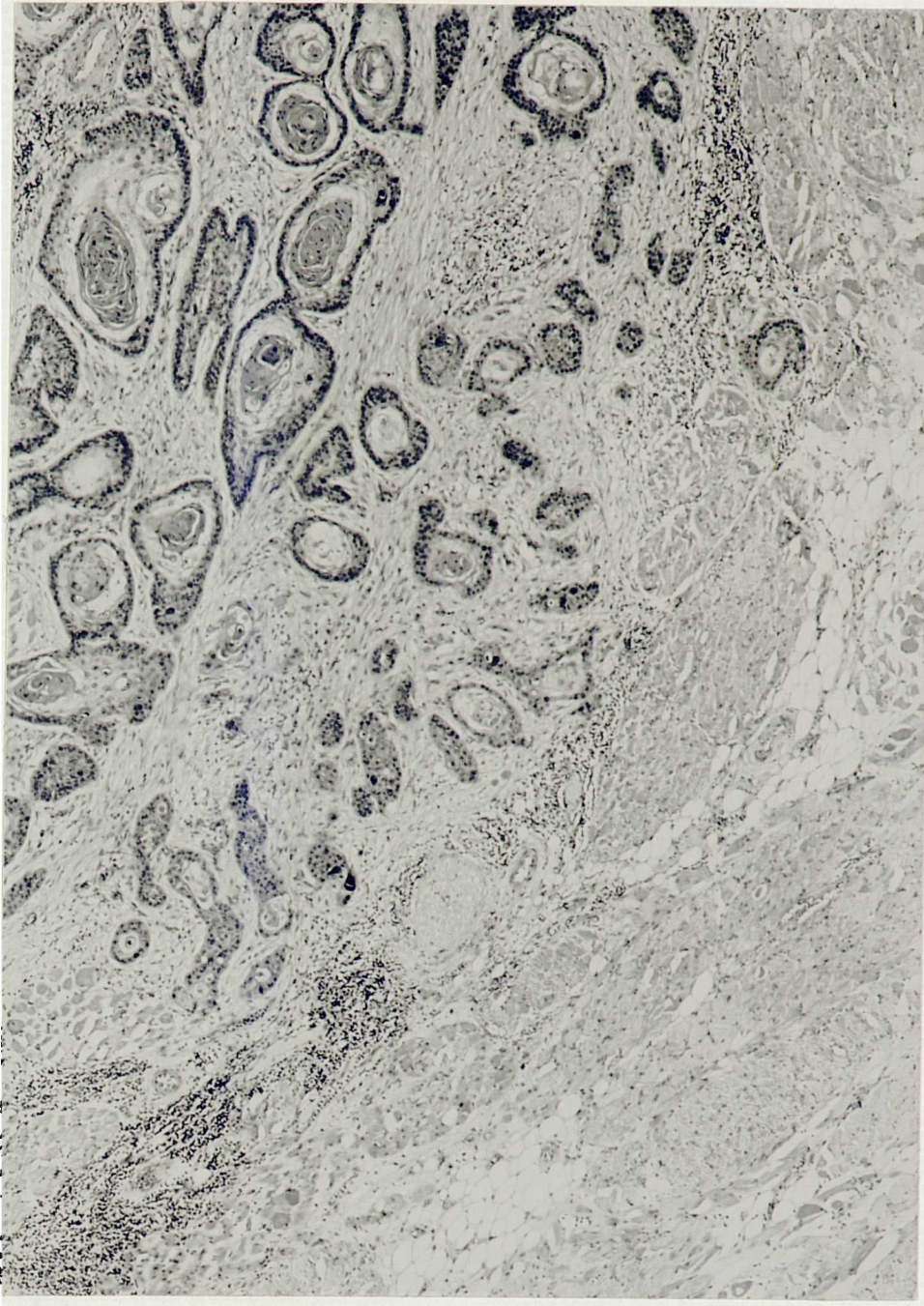
PATTERN OF INVASION: GRADE 2.



Broad bands and solid cords of tumour cells are seen at the advancing front. Haematoxylin and eosin. Original magnification, x40.

Figure 6.4c

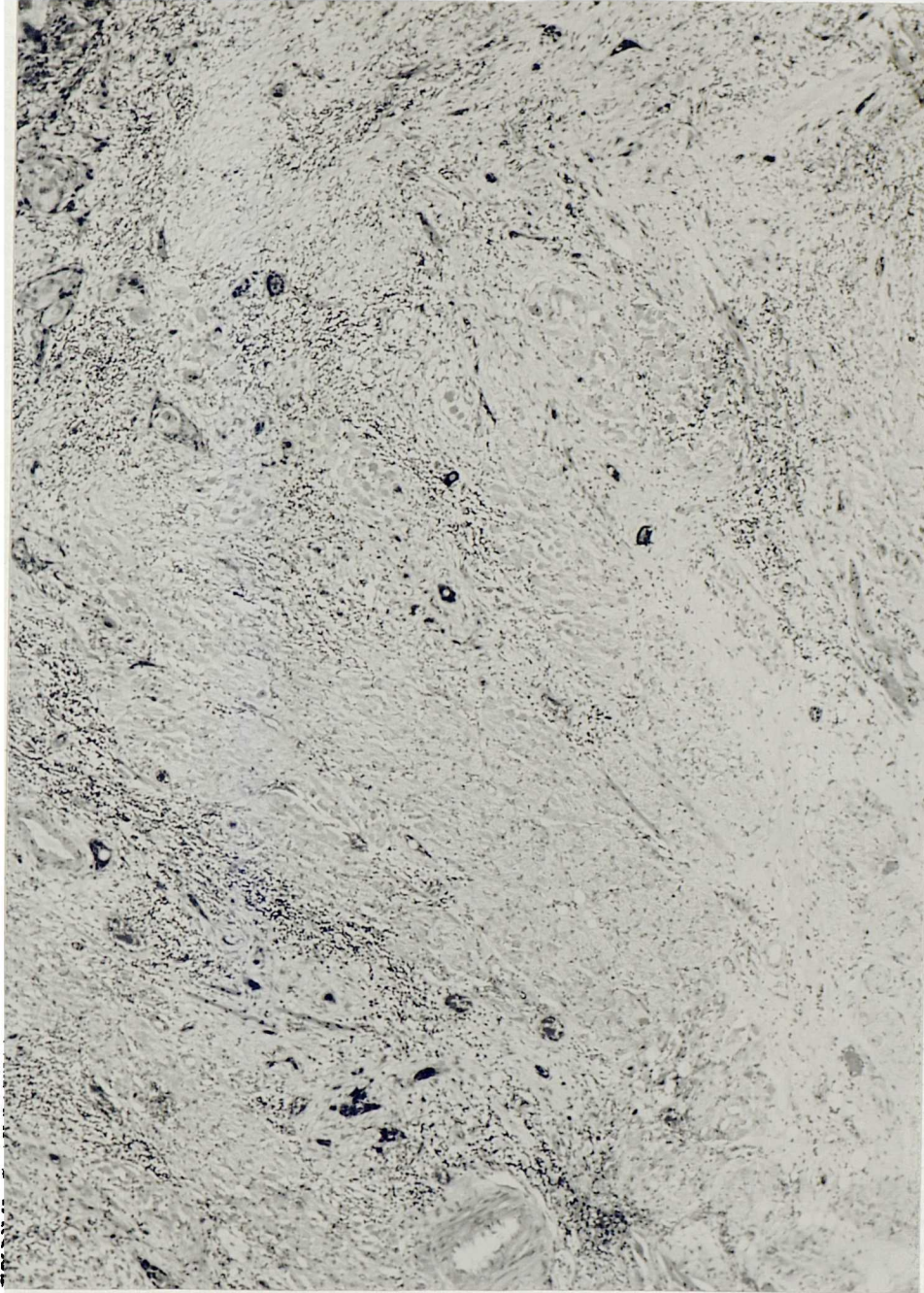
PATTERN OF INVASION: GRADE 3.



Small islands of tumour cells (each containing more than 15 cells) are seen at the advancing front. Haematoxylin and eosin. Original magnification, x40.

Figure 6.4d

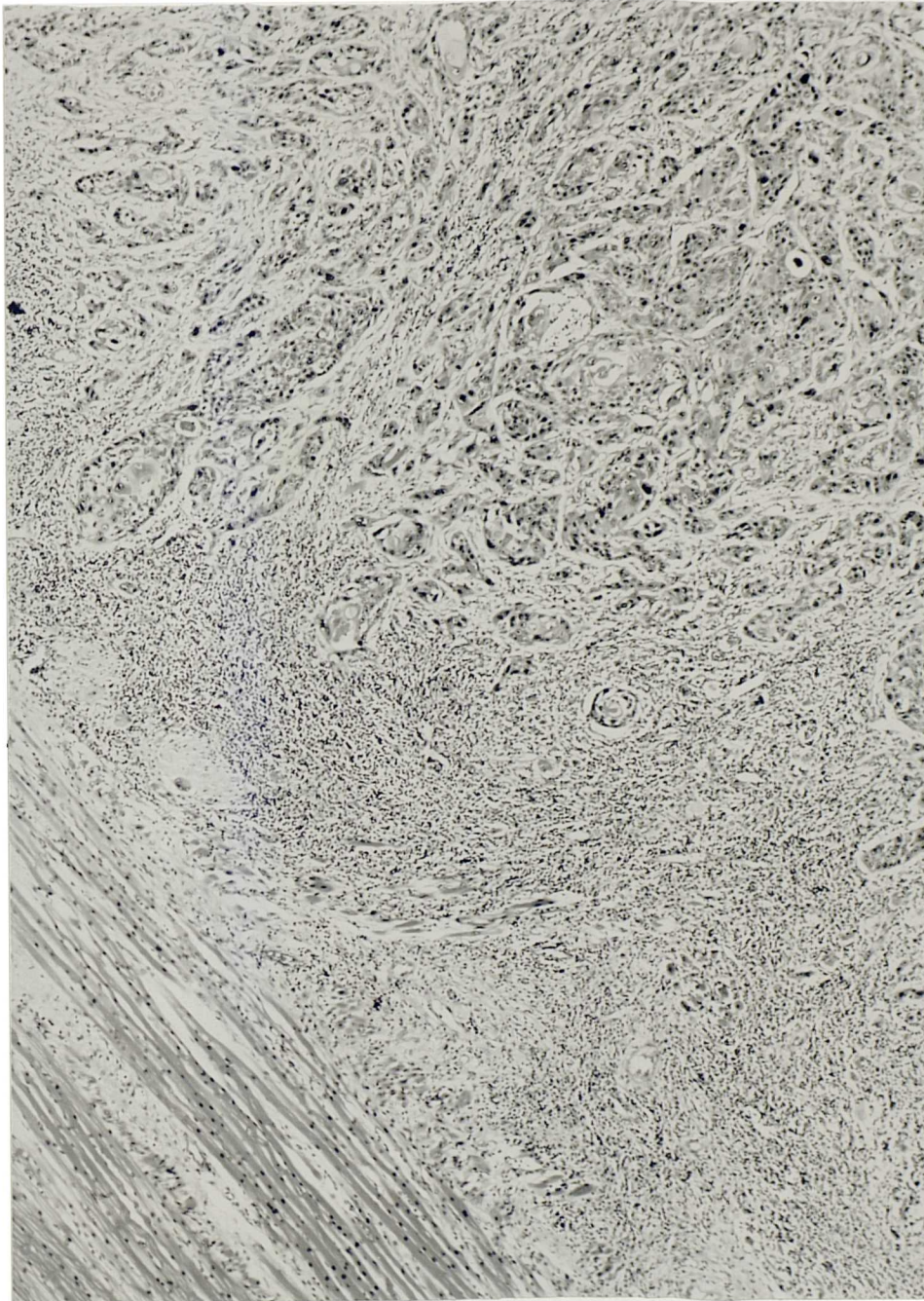
PATTERN OF INVASION: GRADE 4.



The advancing front is poorly delineated with tiny islands and individual tumour cells widely dispersed. Haematoxylin and eosin. Original magnification, x40.

Figure 6.5a

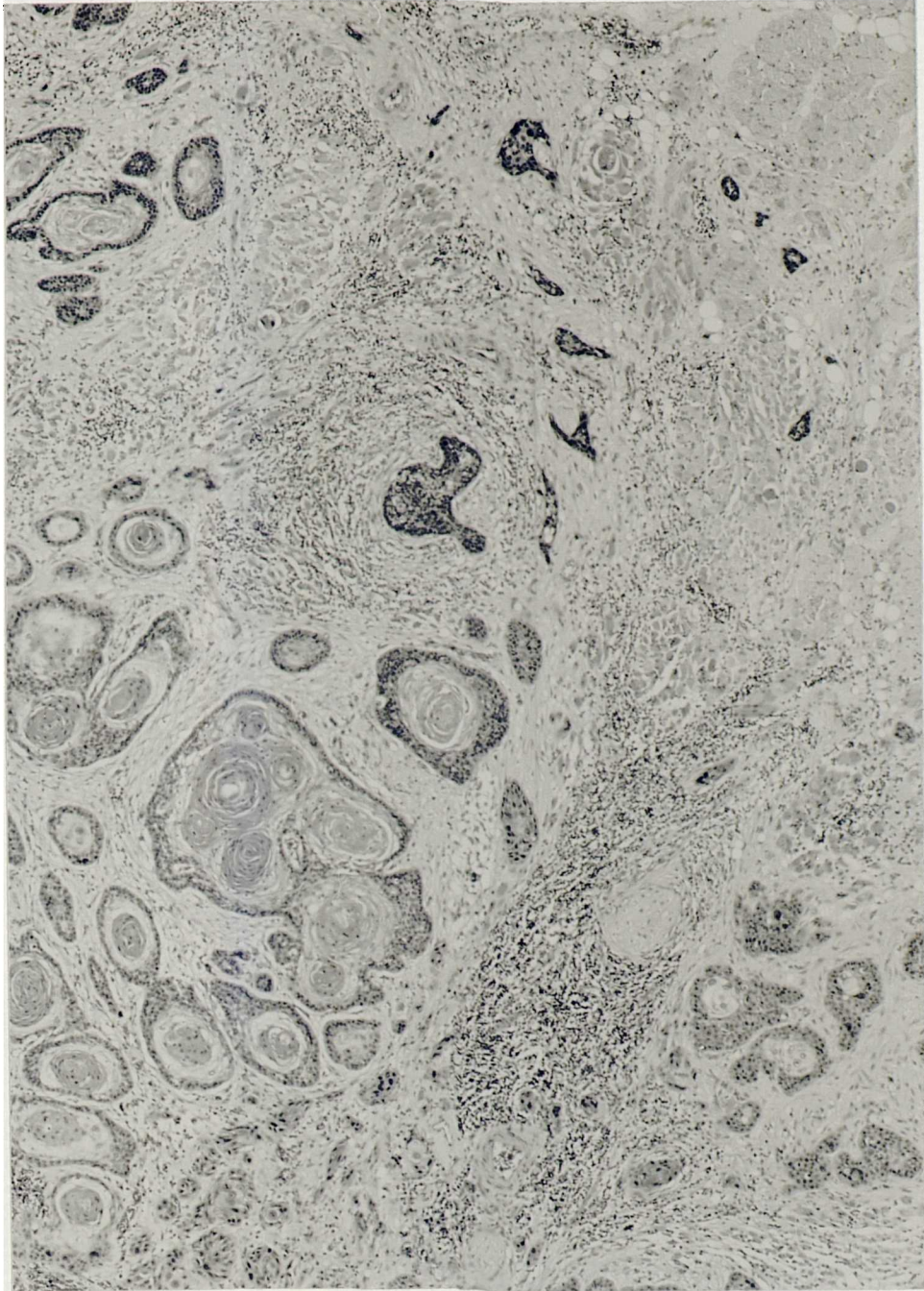
LYMPHOPLASMACYTIC INFILTRATE: GRADE 1.



A dense, continuous band of lymphocytes and plasma cells surrounds the advancing tumour front. Haematoxylin and eosin. Original magnification, x40.

Figure 6.5b

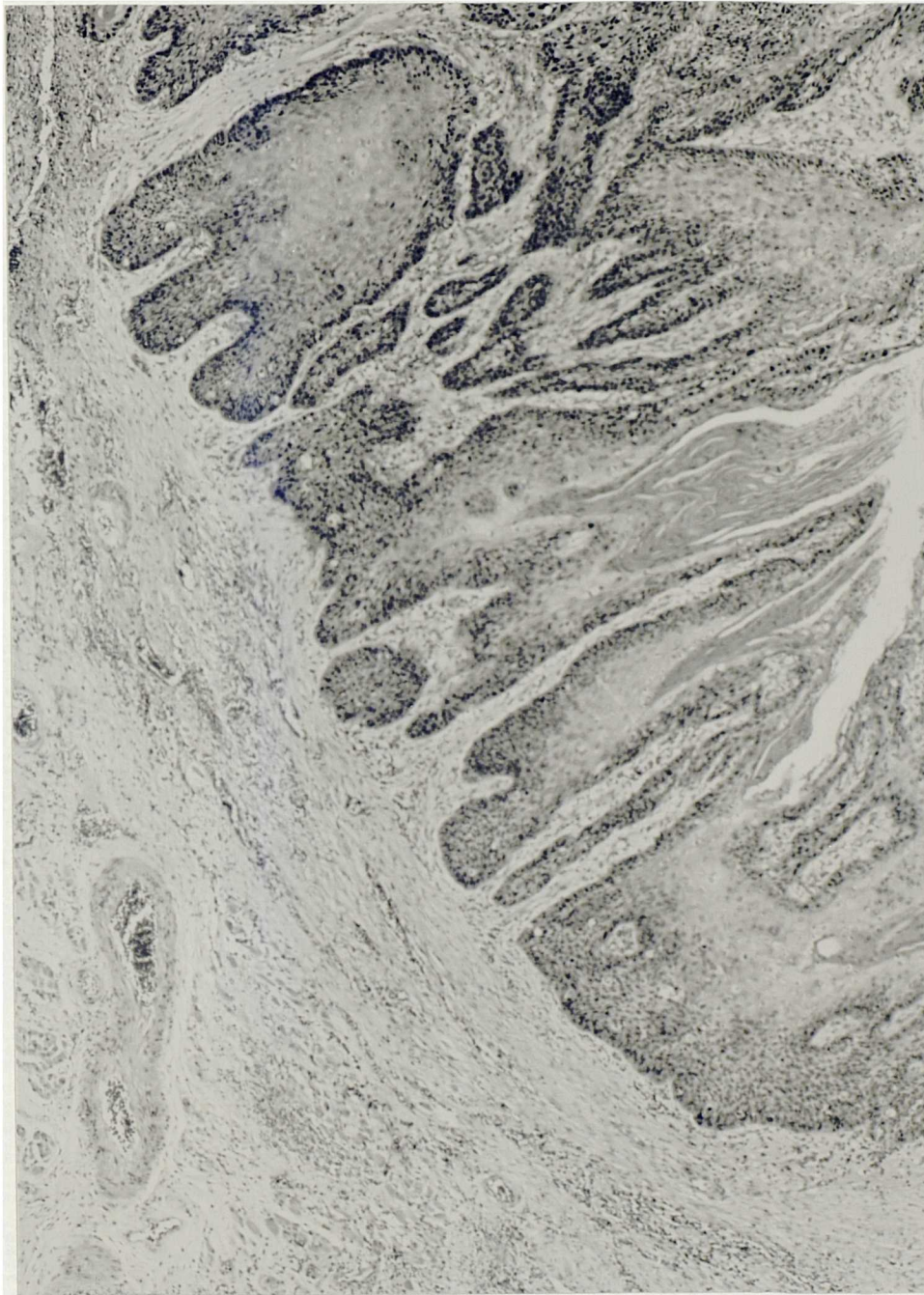
LYMPHOPLASMACYTIC INFILTRATE: GRADE 2.



Large patches of lymphocytes and plasma cells are seen at the advancing tumour front. Haematoxylin and eosin. Original magnification, x40.

Figure 6.5c

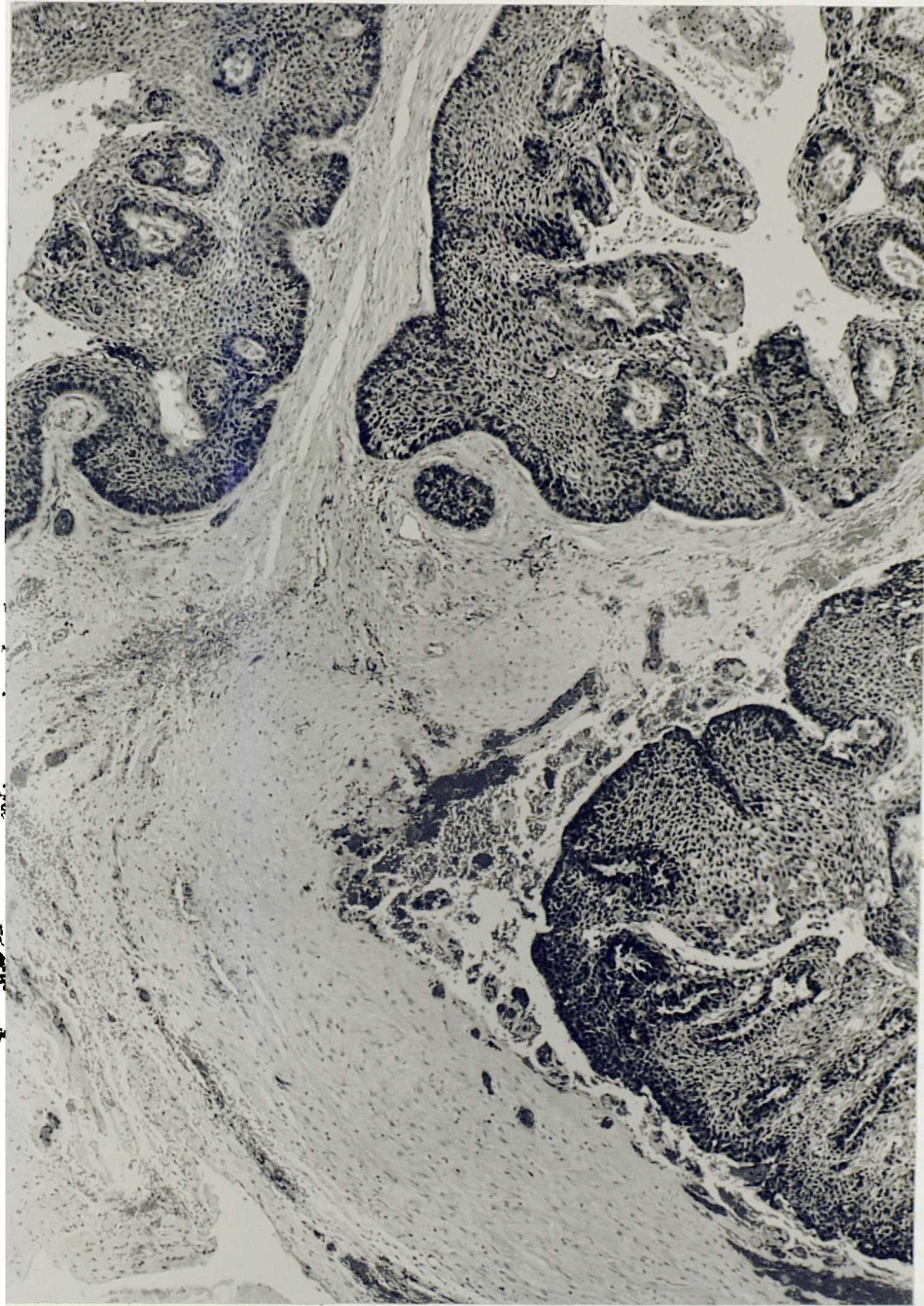
LYMPHOPLASMACYTIC INFILTRATE: GRADE 3.



A sparse and diffuse infiltrate of lymphocytes and plasma cells is seen at the advancing tumour front. Haematoxylin and eosin. Original magnification, x40.

Figure 6.5d

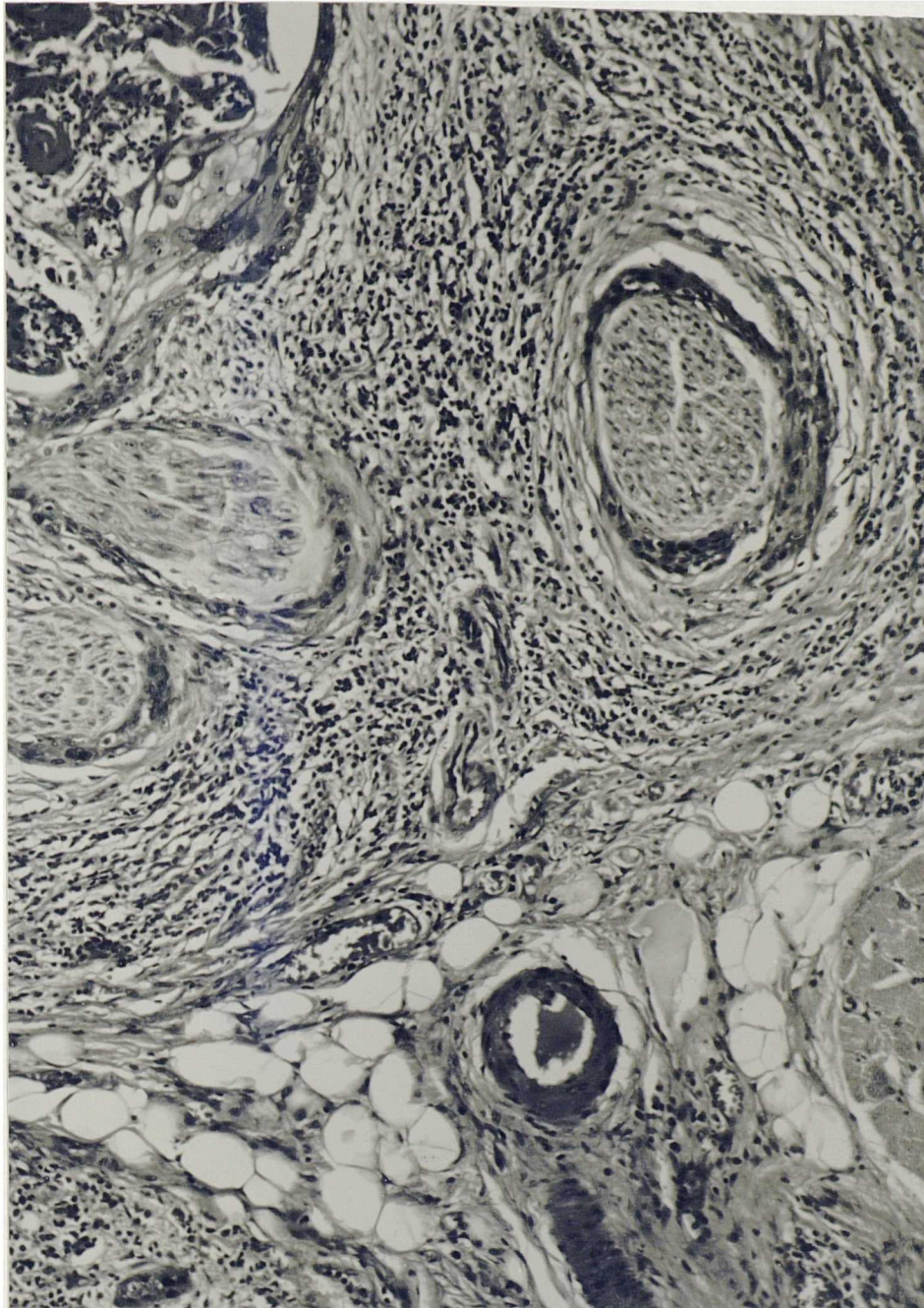
LYMPHOPLASMACYTIC INFILTRATE: GRADE 4.



No lymphocytes or plasma cells are seen at the advancing tumour front.
Haematoxylin and eosin. Original magnification, x40.

Figure 6.6

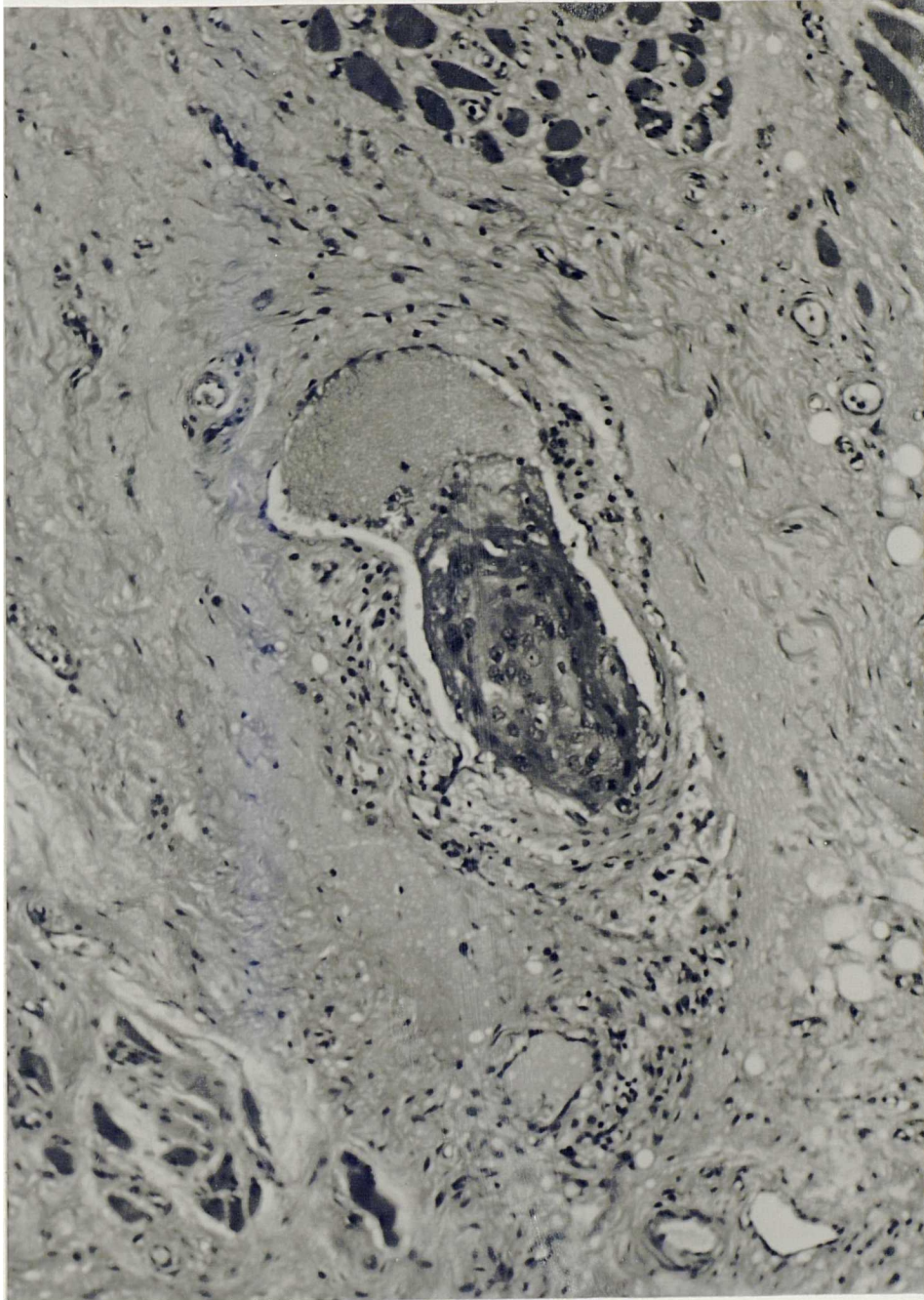
PERINEURAL INVASION.



Tumour cells are seen infiltrating perineural spaces. Haematoxylin and eosin. Original magnification, x100.

Figure 6.7a

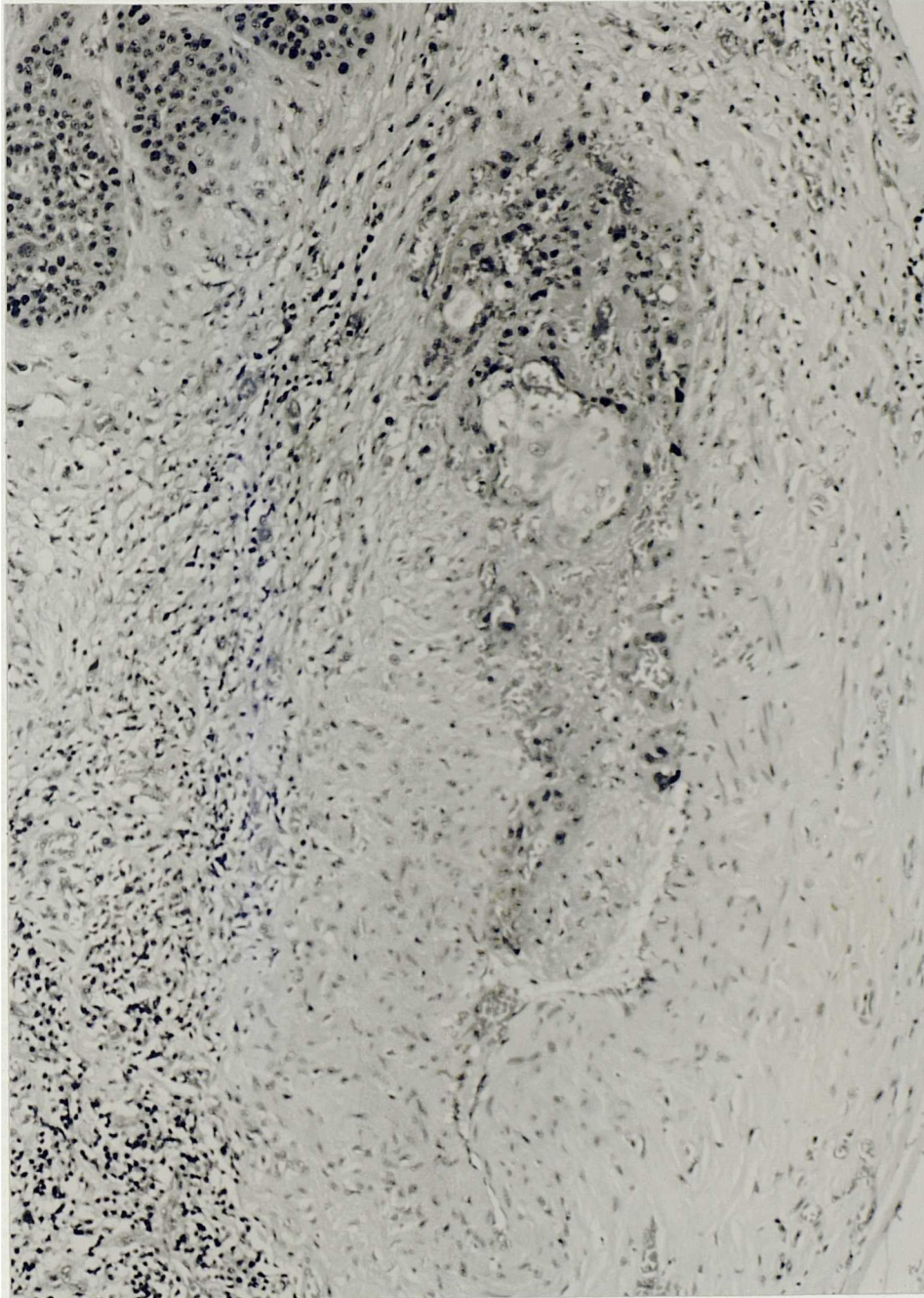
VASCULAR INVASION.



An embolus of tumour cells is seen within an endothelial-lined space. Haematoxylin and eosin. Original magnification, x100.

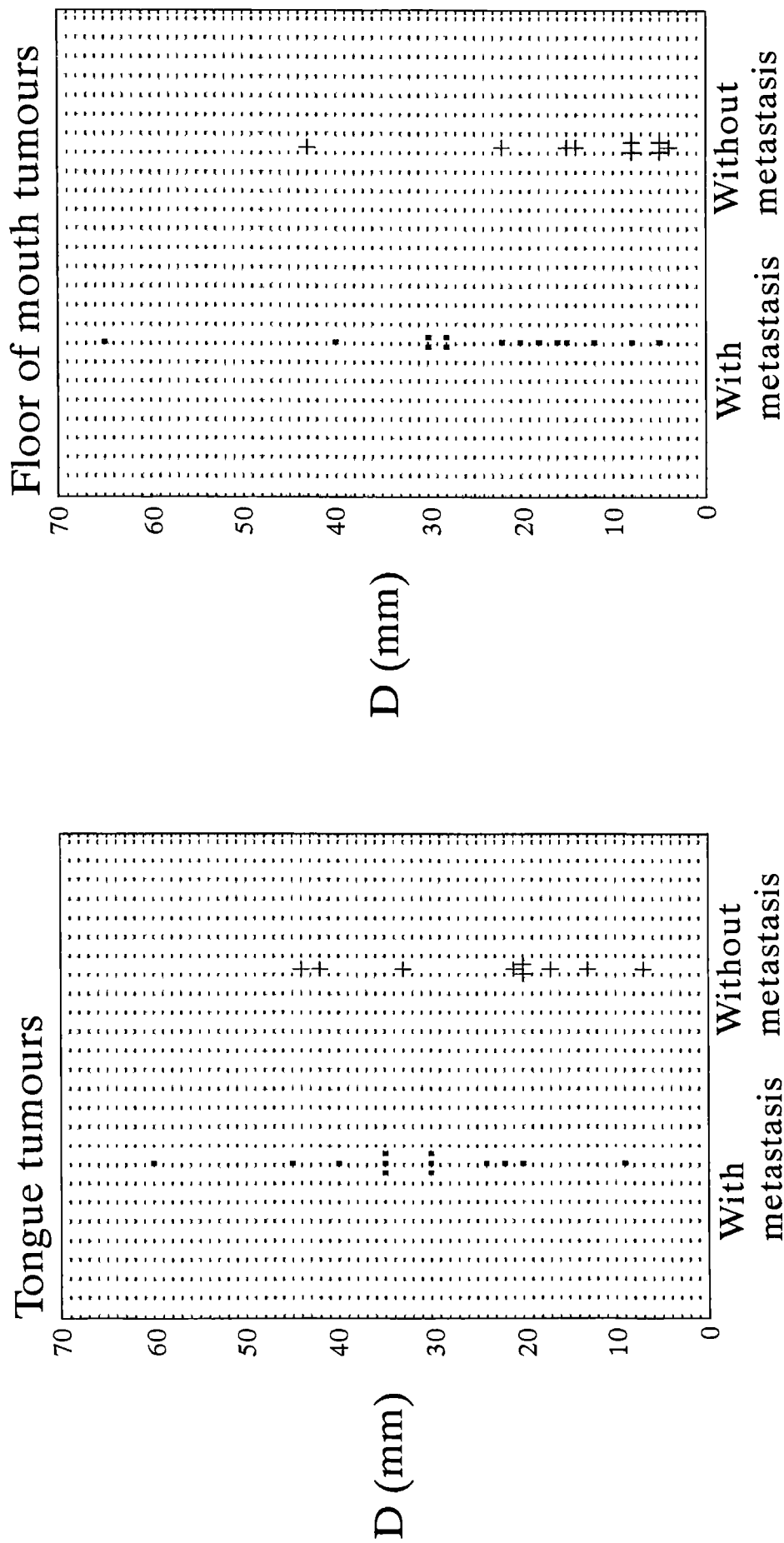
Figure 6.7b

VASCULAR INVASION.



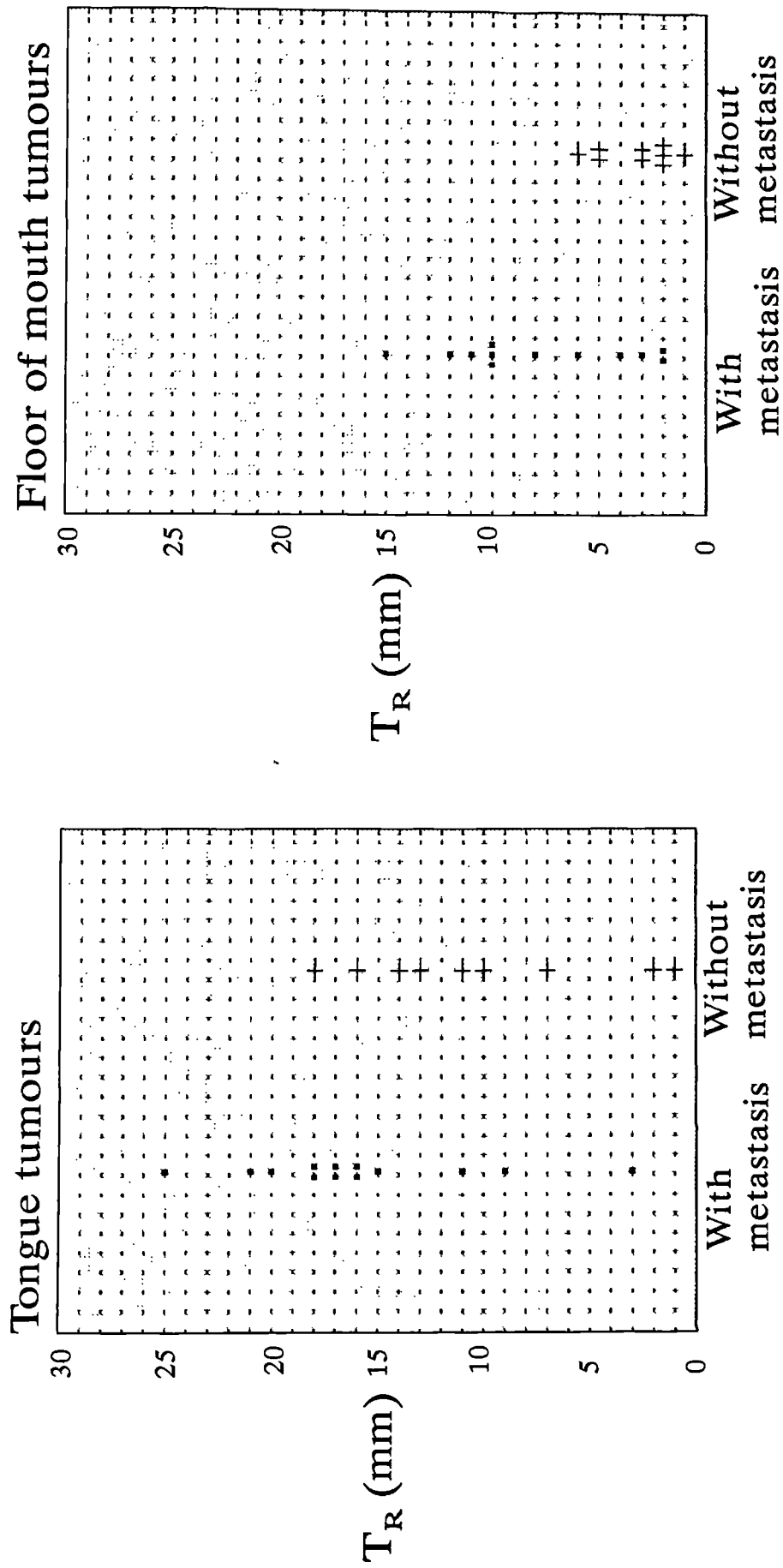
Tumour is seen invading a vessel (with a muscular media), with fibrin partially occluding the lumen. Haematoxylin and eosin. Original magnification, x100.

TUMOUR GREATEST SURFACE DIMENSION (D) IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS GROUPED ACCORDING TO SITE OF PRIMARY TUMOUR.

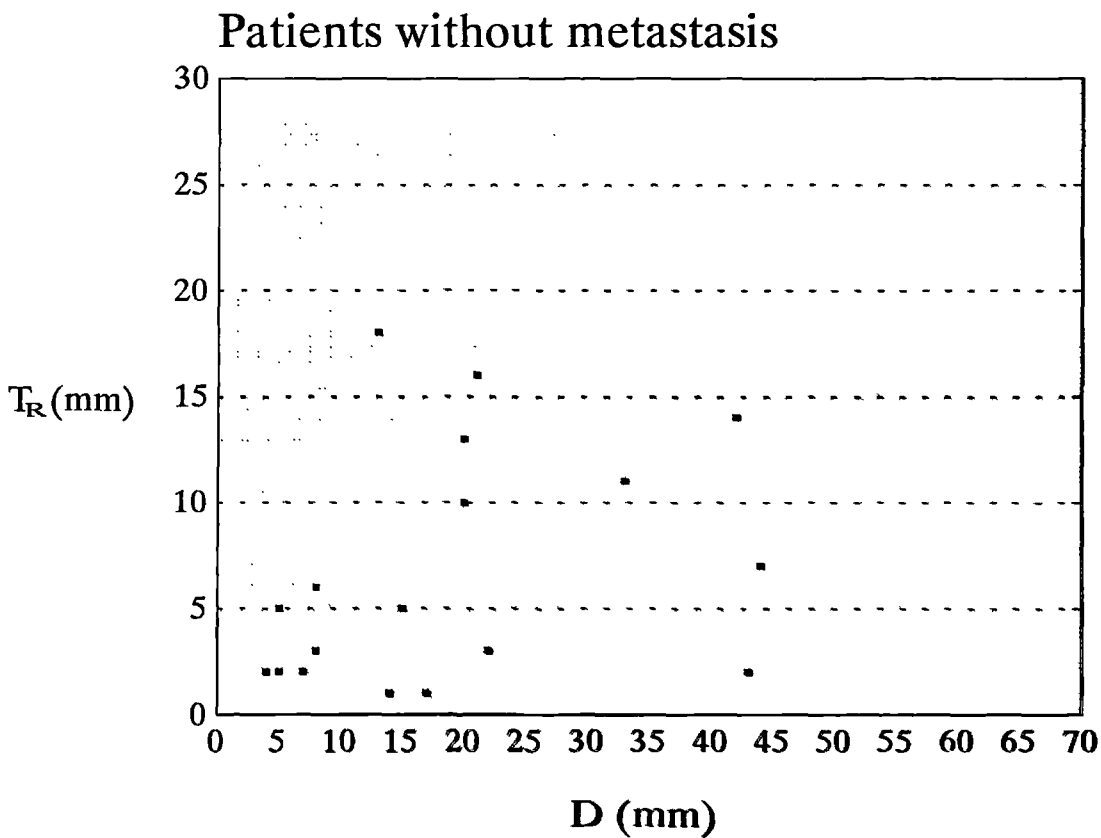
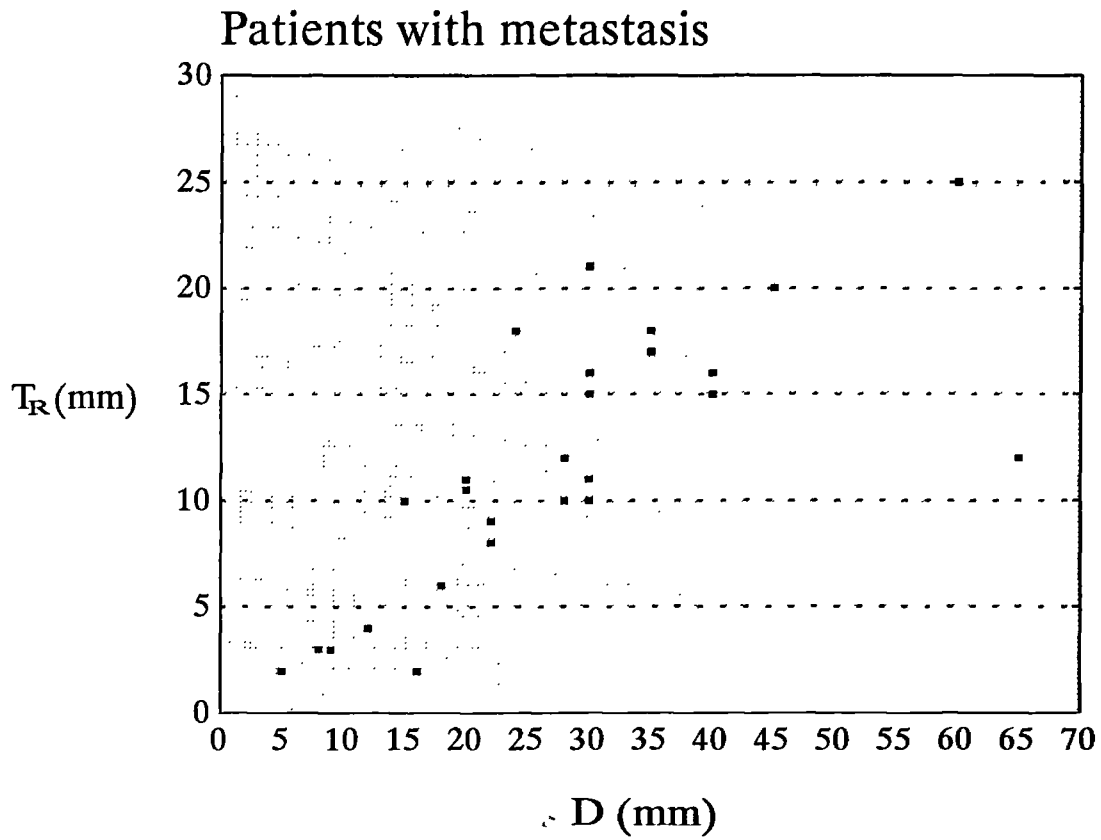


RECONSTRUCTED TUMOUR THICKNESS IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS GROUPED ACCORDING TO SITE OF PRIMARY TUMOUR.

Fig 6.9



RELATIONSHIP BETWEEN RECONSTRUCTED TUMOUR THICKNESS (T_R) AND GREATEST SURFACE DIMENSION (D) IN SERIES II PATIENTS



HISTOLOGICAL MALIGNANCY GRADE IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS

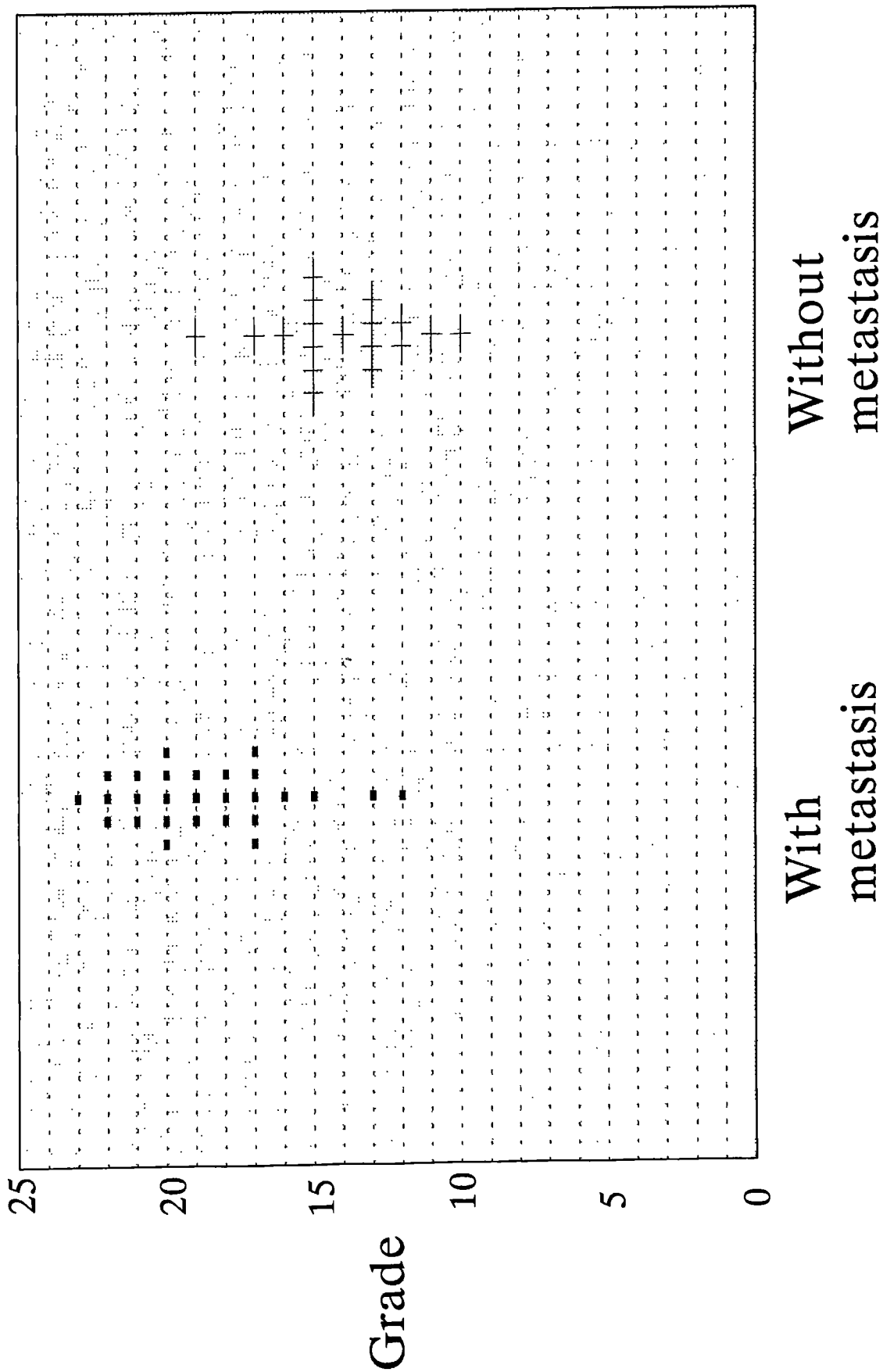
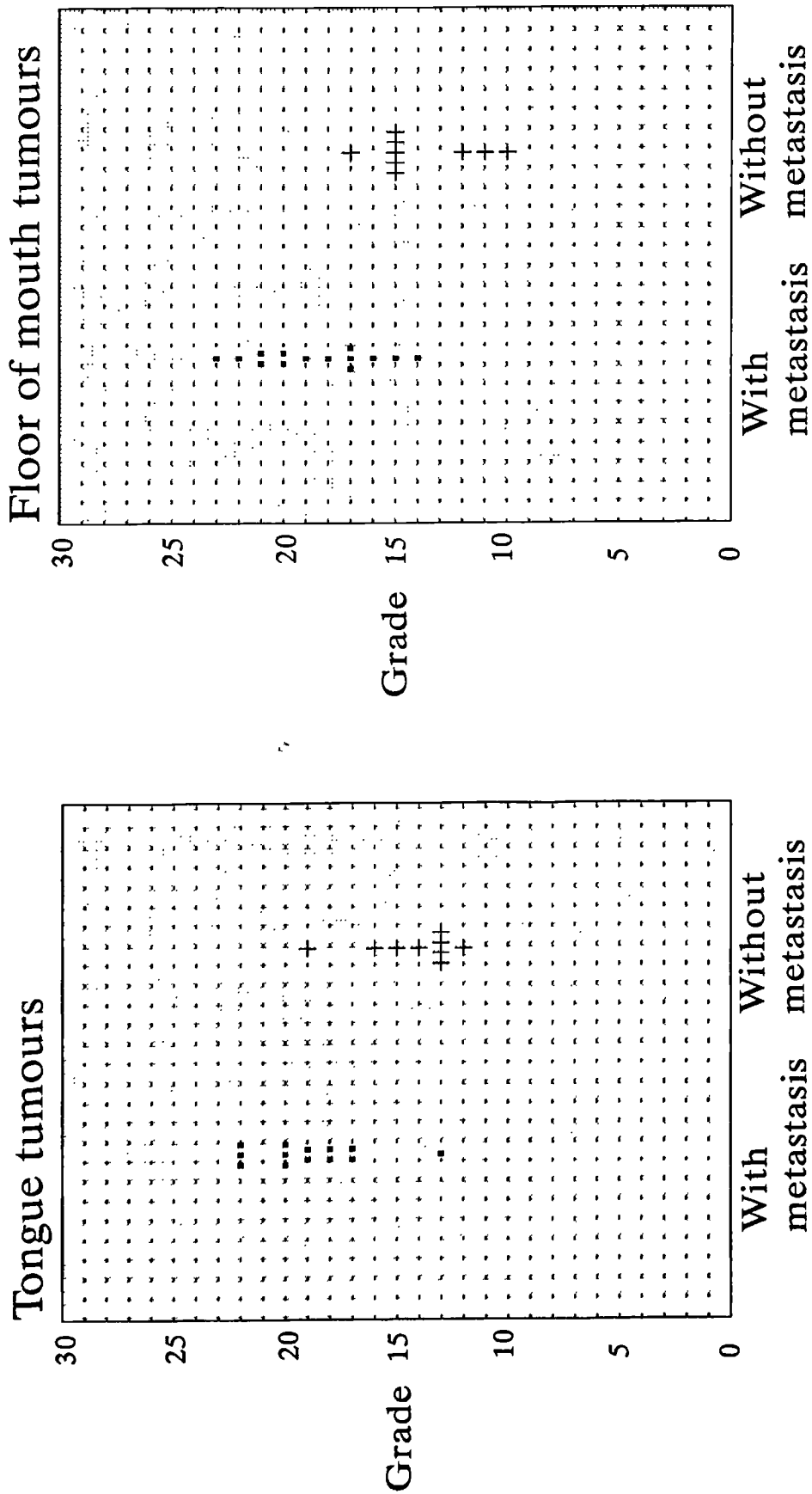
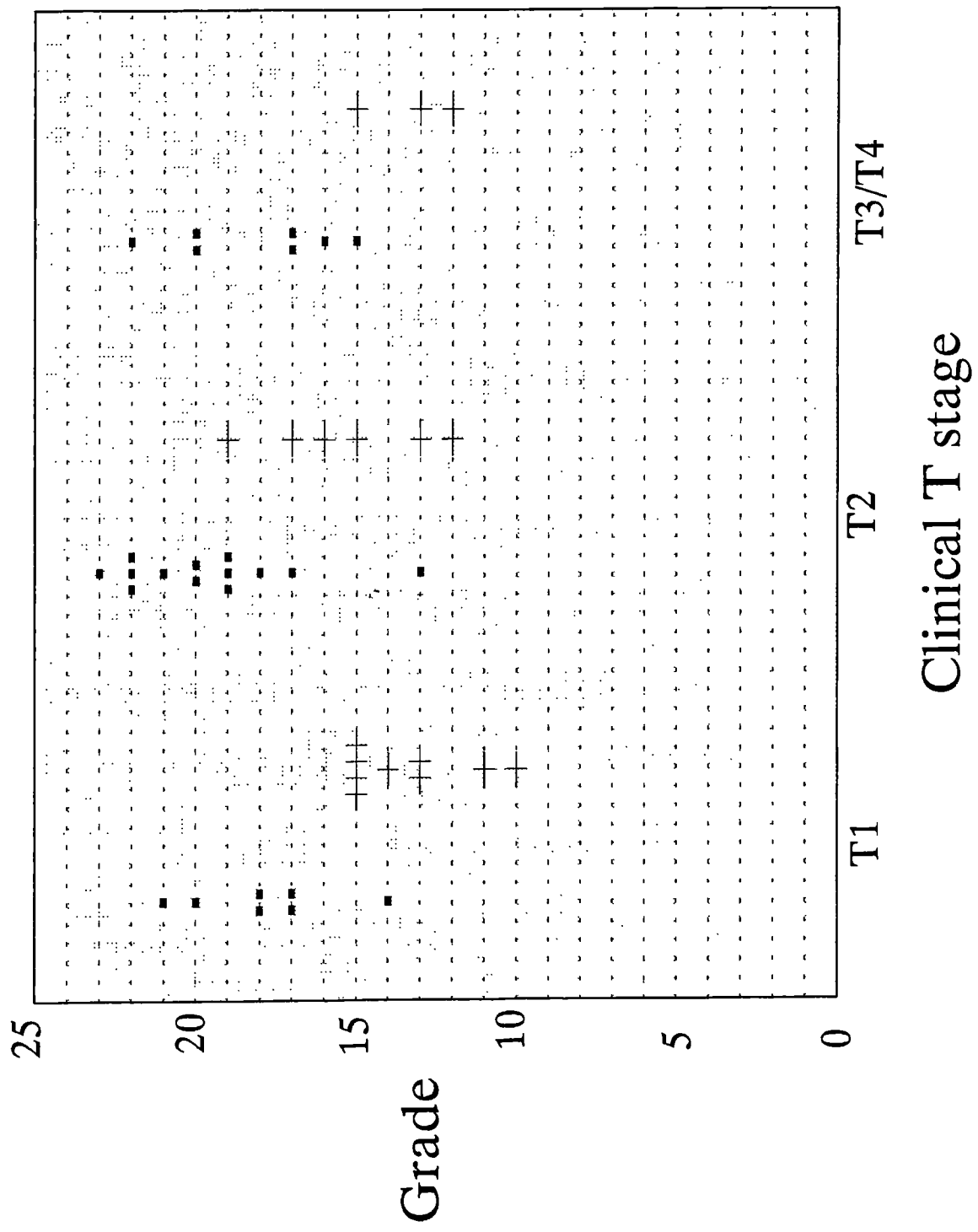


Fig 6.12

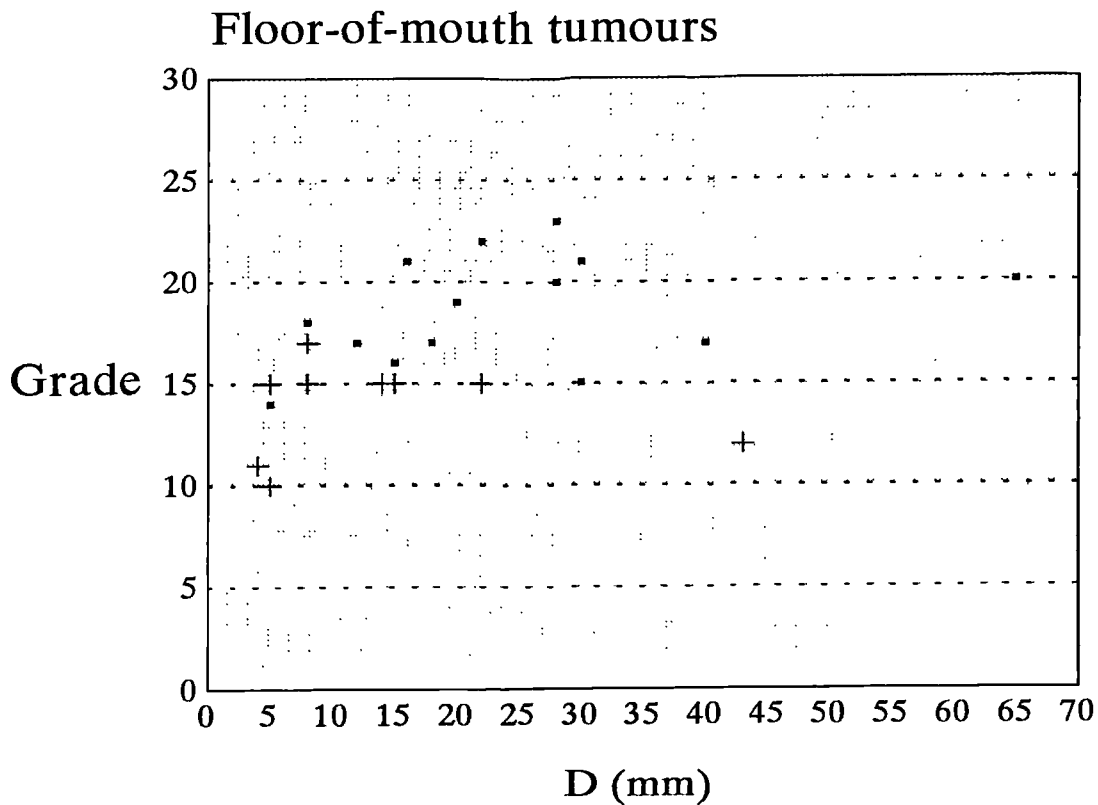
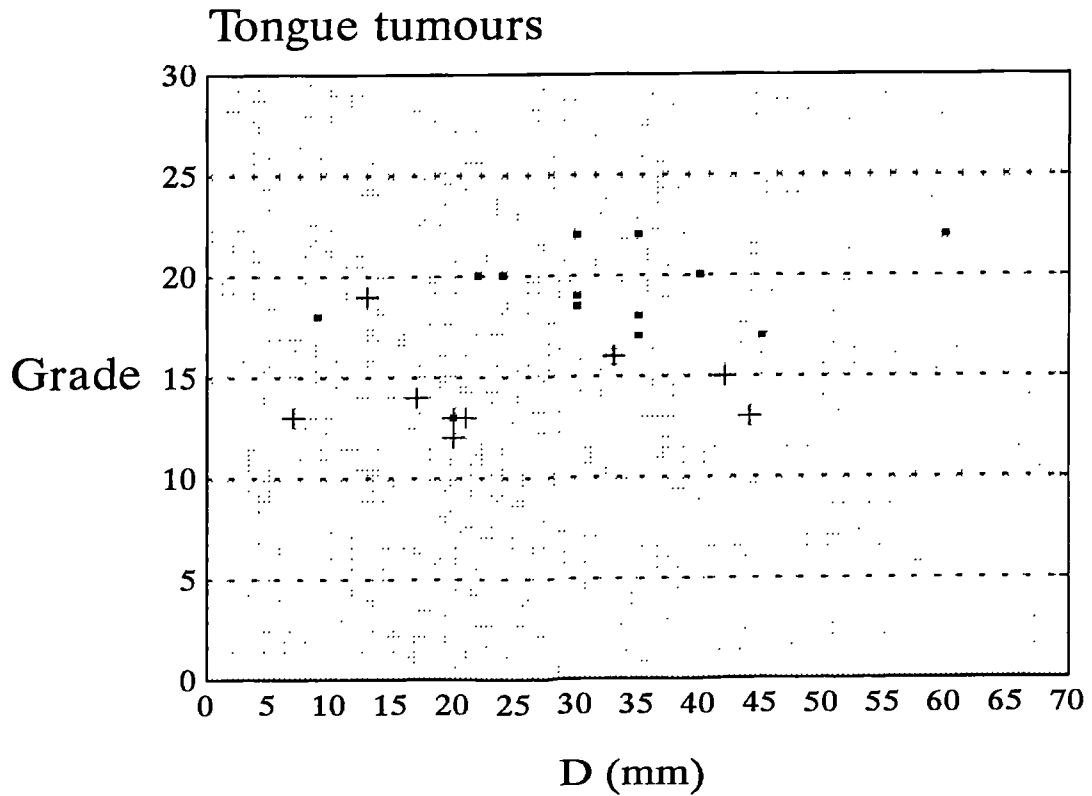
HISTOLOGICAL MALIGNANCY GRADE IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS GROUPED ACCORDING TO SITE OF PRIMARY TUMOUR.



HISTOLOGICAL MALIGNANCY GRADE IN SERIES II TUMOURS GROUPED ACCORDING TO CLINICAL T STAGE

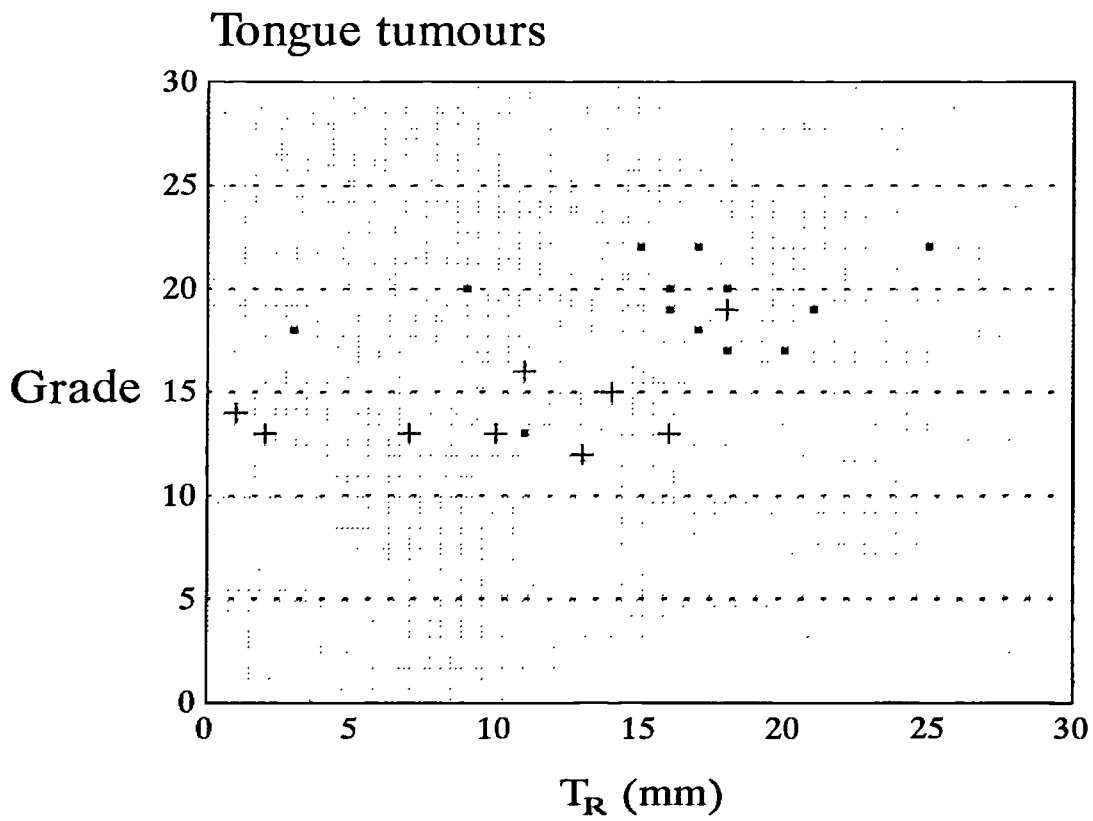
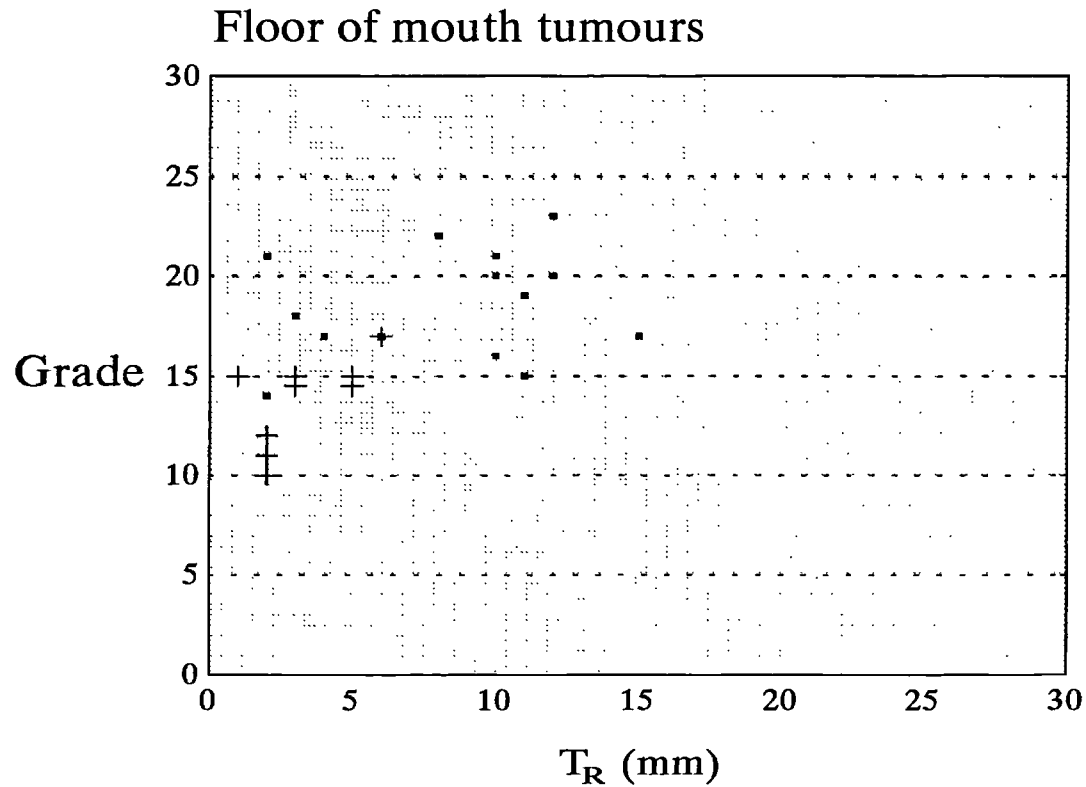


RELATIONSHIP BETWEEN HISTOLOGICAL MALIGNANCY GRADE AND GREATEST SURFACE DIMENSION (D) IN SERIES II PATIENTS.



With metastasis ■
Without metastasis +

RELATIONSHIP BETWEEN HISTOLOGICAL MALIGNANCY GRADE AND RECONSTRUCTED TUMOUR THICKNESS IN SERIES II PATIENTS.



With metastasis ■
Without metastasis +

Figure 7.1

SCHEMATIC DIAGRAM OF THE INTERACTIVE IMAGE ANALYSIS SYSTEM FOR STEREOLOGICAL ESTIMATION OF MEAN NUCLEAR VOLUME BY POINT-SAMPLING OF LINEAR INTERCEPTS.

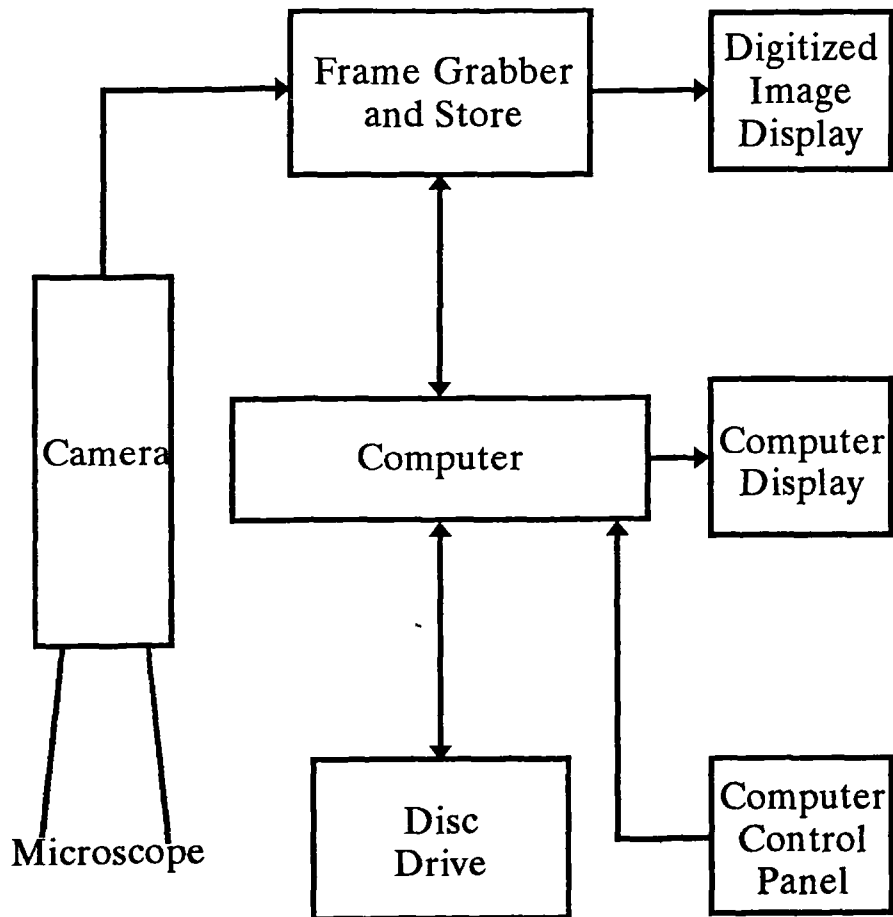
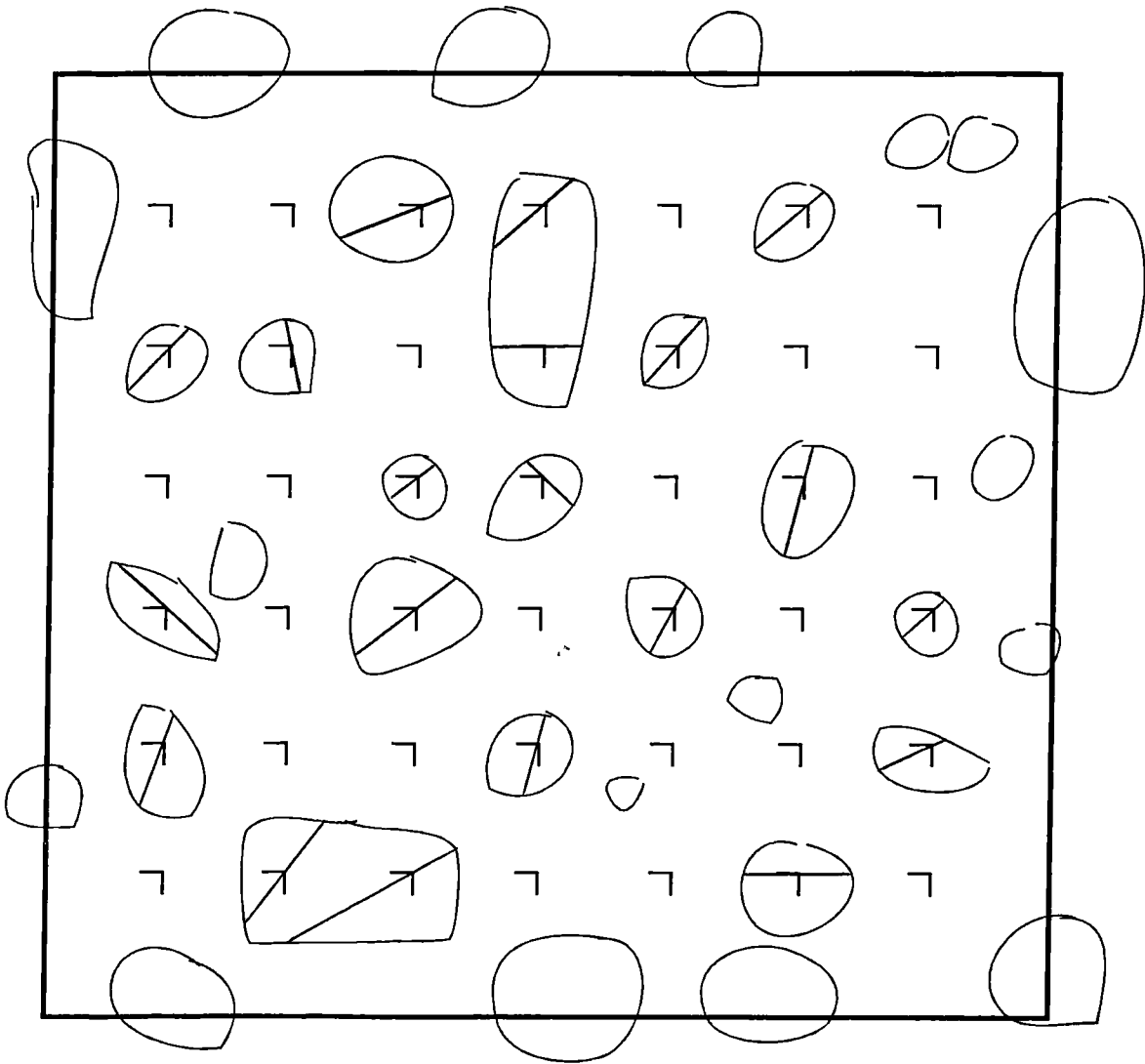


Figure 7.2

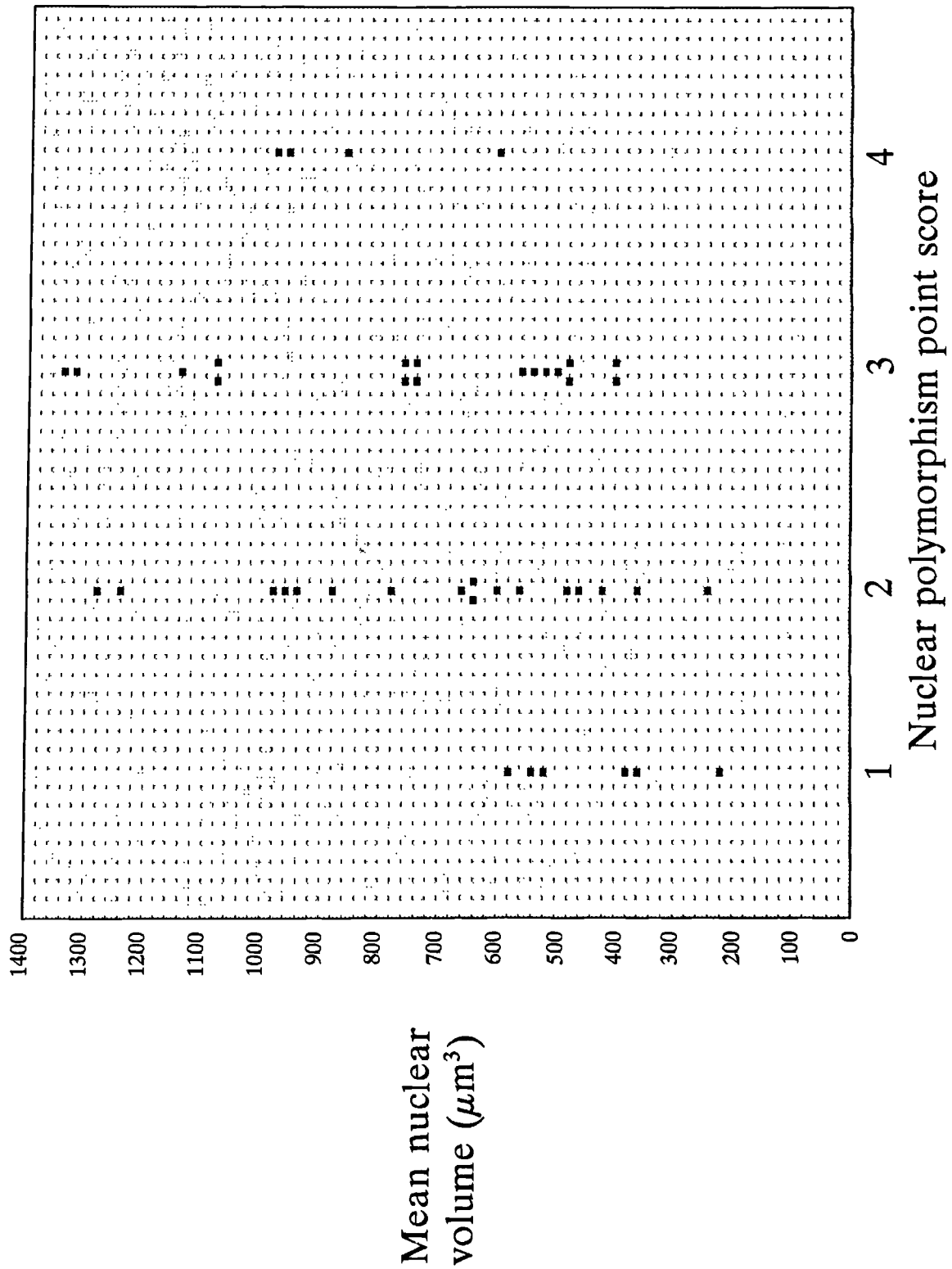
VERTICAL SECTION OF A SQUAMOUS CELL CARCINOMA SHOWING KERATINOCYTE NUCLEI WITH TEST GRID IN POSITION FOR MEASUREMENT OF OBSERVED POINT-SAMPLED INTERCEPT LENGTHS (l_o).



When a point hits a nuclear profile, a signal to generate a test-line is given, via the computer control panel. The test-line is generated in a three-dimensionally isotropic direction. Using the mouse part of the control panel, the cursors are then positioned at the intercept of the test-line and the nuclear profile. A second signal is given, and the observed intercept length, l_o (indicated by the red line), is then measured and recorded automatically. The cursor is moved to another nucleus, and the process is repeated until the intercept lengths of all point-sampled nuclei have been measured.

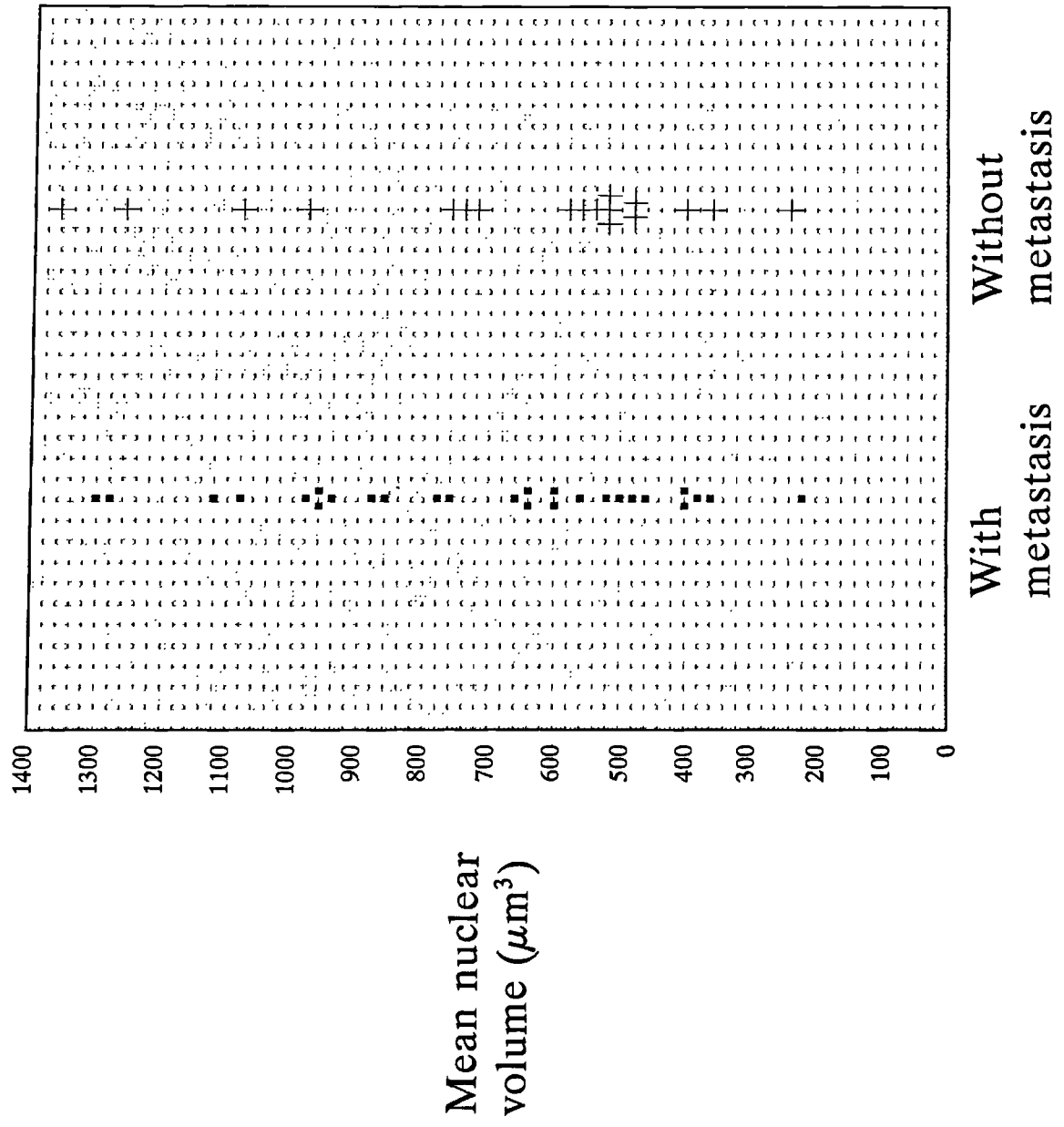
RELATIONSHIP BETWEEN VOLUME WEIGHTED MEAN NUCLEAR VOLUME AND NUCLEAR POLYMORPHISM POINT SCORE IN SERIES II PATIENTS.

Fig 7.3



VOLUME-WEIGHTED MEAN NUCLEAR VOLUME IN SERIES II PATIENTS WITH AND WITHOUT METASTASIS.

Fig 7.4



Section 3.

APPENDICES.

1. Appendix 1.
2. Appendix 2.
3. Appendix 3.

Appendix 1.

AMERICAN JOINT COMMITTEE ON CANCER (1988) TNM CLASSIFICATION
DEFINITIONS FOR STAGING CANCERS OF THE LIP AND ORAL CAVITY

Primary Tumour (T)

- T1 Tumour 2cm. or less in greatest dimension.
- T2 Tumour more than 2cm. but not more than 4cm. in greatest dimension.
- T3 Tumour more than 4cm. in greatest dimension.
- T4 Tumour invades adjacent structures, e.g., through cortical bone, into deep (extrinsic) muscle of tongue, maxillary sinus, skin.

Lymph Node (N)

- N0 No regional lymph node metastasis.
- N1 Metastasis in a single ipsilateral lymph node, 3cm. or less in greatest dimension.
- N2a Metastasis in a single ipsilateral lymph node more than 3cm. but not more than 6cm. in greatest dimension.
- N2b Metastasis in multiple ipsilateral lymph nodes, none more than 6cm. in greatest dimension.
- N2c Metastasis in bilateral or contralateral lymph nodes, none more than 6cm. in greatest dimension.
- N3 Metastasis in a lymph node more than 6cm. in greatest dimension.

Distant Metastasis (M)

- M0 No distant metastasis.
- M1 Distant metastasis.

Stage Grouping

Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T3	N0	M0
	T1	N1	M0
	T2	N1	M0
	T3	N1	M0
Stage IV	T4	N0	M0
	T4	N1	M0
	Any T	N2	M0
	Any T	N3	M0
	Any T	Any N	M1

Appendix 2.

NECK DISSECTIONS (OCTOBER 1989 - OCTOBER 1992)

For each neck dissection (ND), the laboratory reference number (P), the sex and age of the patient, the type of surgical procedure and the histological diagnosis are given.

ND1 (P27746), male, 64 years.

Radical dissection of right neck (unilateral procedure) in continuity with resection of residual T3 SCC, right oral tongue (pre-operative chemotherapy).

One metastatic mass: level II.

Four positive nodes: level I(1), level II(1), level III(1),
level IV(1).

ND2 (P27791), female, 67 years.

Radical dissection of right neck (unilateral procedure) simultaneous with resection of T2 SCC, right buccal mucosa.

One positive node: level I.

ND3 (P27864), female, 45 years.

Suprahyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.

No evidence of metastasis.

ND4 (P27864), female, 45 years.

Suprahyoid dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.

No evidence of metastasis.

ND5 (P27893), male, 62 years.

Supra-omohyoid dissection of left neck (unilateral procedure) simultaneous with resection of T2 SCC, left buccal mucosa.

Two positive nodes: level I.

ND6 (P27940), male, 61 years.

Radical dissection of left neck (unilateral procedure). Previous resection of T4 SCC, left maxillary antrum.

One metastatic mass: level I.

ND7 (P28063), female, 51 years.

Radical dissection of left neck (unilateral procedure). Previous resection of medullary carcinoma of thyroid.

Metastatic thyroid medullary carcinoma.

ND8 (P28065), female, 72 years.

Functional dissection of left neck (unilateral procedure) in continuity with resection of recurrence of T1 SCC, left buccal mucosa (previous surgery).

No evidence of metastasis.

ND9 (P28125), male, 61 years.

Radical dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left oral tongue.

Two positive nodes: level III (1), level IV (1).

ND10 (P28158), male, 69 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T3 SCC, right retromolar trigone.
No evidence of metastasis.

ND11 (P28180), female, 38 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of carcinoma ex pleomorphic adenoma, left parotid.
Metastatic adenocarcinoma.

ND12 (P28329), female, 74 years.
Radical dissection of left neck (unilateral procedure). Previous resection of synchronous T1 SCCs, dorsum and undersurface of oral tongue and lower lip.
One positive node: level II.

ND13 (P28337), female, 67 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of T2 SCC, left oral tongue.
No evidence of metastasis.

ND14 (P28361), female, 67 years.
Suprahyoid dissection of right neck (unilateral procedure). Previous resection of T1 SCC, right buccal mucosa.
One positive node: level I.

ND15 (P28373), male, 60 years.
Radical dissection of left neck (unilateral procedure). Clinically covert primary SCC.
One metastatic mass: level II.

ND16 (P28379), male, 50 years.
Radical dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
No evidence of metastasis.

ND17 (P28455), female, 83 years.
Radical dissection of left neck (unilateral procedure). Previous resection of SCC, skin of forehead.
One metastatic mass: level II.
Two positive nodes: parotid gland.

ND18 (P28510), male, 46 years.
Radical dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
No evidence of metastasis.

ND19 (P28511), male, 68 years.
Functional dissection of left neck (bilateral procedure) simultaneous with resection of T2 SCC, lower lip.
No evidence of metastasis.

ND20 (P28511), male, 68 years.
Functional dissection of right neck (bilateral procedure) simultaneous with resection of T2 SCC, lower lip.
No evidence of metastasis.

ND21 (P28543), female, 68 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of residual T2 SCC, left oral tongue (pre-operative radiotherapy).
One positive node: level II.

ND22 (P28593), female, 55 years.
Supra-omohyoid dissection of right neck (unilateral procedure) in continuity with resection of T1 SCC, right oral tongue.
No evidence of metastasis.

ND23 (P28641), male, 61 years.
Suprahyoid dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left floor of mouth.
No evidence of metastasis.

ND24 (P28655), male, 52 years.
Suprahyoid dissection of right neck (unilateral procedure) in continuity with resection of T1 SCC, right floor of mouth.
No evidence of metastasis.

ND25 (P28745), female, 78 years.
Radical dissection of right neck (unilateral procedure). Previous resection of T2 SCC, right oral tongue.
One positive node: level II.

ND26 (P28774), male, 72 years.
Radical dissection of right neck (unilateral procedure). Previous resection of metachronous T1 SCC, left oral tongue and T2 SCC, right oropharynx and suprahyoid dissection of right neck.
One metastatic mass: level II-III.
Eight positive nodes: level II(1), level III(3), level IV(3), level V(1).

ND27 (P28880), male, 58 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of primary intraosseous carcinoma, right mandible.
Two positive nodes: level II.

ND28 (P28892), male, 42 years.
Radical dissection of right neck (unilateral procedure). Previous resection of T1 SCC, right oral tongue.
One positive node: level II.

ND29 (P28914), female, 49 years.
Radical dissection of left neck (bilateral procedure) in continuity with resection of recurrent adenocarcinoma of left submandibular gland.
Metastatic salivary adenocarcinoma.

ND30 (P28914), female, 49 years.
Functional dissection of right neck (bilateral procedure) simultaneous with resection of recurrent adenocarcinoma of left submandibular gland.
Metastatic salivary adenocarcinoma.

ND31 (P28956), male, 65 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of T2 SCC, left oral tongue.
One positive node: level I.

ND32 (P29037), male, 79 years.
Radical dissection of left neck (unilateral procedure) simultaneous with resection of malignant melanoma, skin of forehead.
Metastatic malignant melanoma.

ND33 (P29038), male, 64 years.
Radical dissection of left neck (unilateral procedure).
Malignant lymphoma.

ND34 (P29072), female, 27 years.
Functional dissection of left neck (unilateral procedure). Previous resection of malignant melanoma, skin of forehead.
Metastatic malignant melanoma.

ND35 (P29077), male, 45 years.
Radical dissection of left neck (bilateral procedure) in continuity with resection of residual T3 SCC, oropharynx (pre-operative chemotherapy and radiotherapy).
One metastatic mass: level II.

ND36 (P29077), male, 45 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of residual T3 SCC, oropharynx (pre-operative chemotherapy and radiotherapy).
No evidence of metastasis.

ND37 (P29127), male, 51 years.
Suprahyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
One positive node: level I.

ND38 (P29127), male, 51 yeras.
Suprahyoid dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND39 (P29285), female, 68 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of T3 SCC, left oral tongue.
Four metastatic masses: level II(2), level III(1), level IV(1).
One positive node: level III.

ND40 (P29316), female, 62 years.
Radical dissection of left neck (unilateral procedure). Previous resection of T1 SCC, left oral tongue.
One positive node: level II.

ND41 (P29317), female, 64 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T2 SCC, left oral tongue.
No evidence of metastasis.

ND42 (P29362), male, 63 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, anterior floor of mouth.
No evidence of metastasis.

ND43 (P29362), male, 63 years.
Supra-omohyoid dissection of right neck (bilateral procedure) simultaneous with resection of T2 SCC, anterior floor of mouth.
No evidence of metastasis.

ND44 (P29435), male, 77 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of residual T4 SCC, floor of mouth (pre-operative chemotherapy).
One metastatic mass: level I.
Two positive nodes: level I(1), level II(1).

ND45 (P29435), male, 77 years.
Radical dissection of right neck (bilateral procedure) in continuity with resection of residual T4 SCC, floor of mouth (pre-operative chemotherapy).
Two metastatic masses: level I.
Three positive nodes: level II(2), level III(1).

ND46 (P29555), female, 68 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T3 SCC, left lower alveolar ridge.
No evidence of metastasis.

ND47 (P29756), male, 46 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T1 SCC, right oral tongue.
No evidence of metastasis.

ND48 (P29785), female, 47 years.
Functional dissection of right neck (unilateral procedure). Previous resection of T1 SCC, floor of mouth and bilateral suprahyoid dissections (ND3 and ND4).
No evidence of metastasis.

ND49 (P29786), male, 74 years.
Supra-omohyoid dissection of left neck (unilateral procedure) in continuity with resection of recurrence of T2 SCC, left retromolar trigone.
No evidence of metastasis.

ND50 (P29945), female, 78 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of recurrence of T1 SCC, right oral tongue (pre-operative radiotherapy).
No evidence of metastasis.

ND51 (P29866), male, 72 years.
Supra-omohyoid dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right floor of mouth.
One positive node: level II.

ND52 (P29902), male, 67 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T3 SCC, left oral tongue.
Two positive nodes: level II(1), level IV(1).

ND53 (P29975), female, 79 years.
Radical dissection of right neck (unilateral procedure) in continuity with resection of malignant melanoma, skin of cheek.
Metastatic malignant melanoma.

ND54 (P30010), male, 42 years.
Radical dissection of right neck (unilateral procedure). Previous resection of T2 SCC, lower lip.
One metastatic mass: level I.

ND55 (P30048), male, 49 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right buccal mucosa.
No evidence of metastasis.

ND56 (P30144), female, 69 years.
Functional dissection of left neck (unilateral procedure) simultaneous with resection of T1 SCC, left buccal mucosa.
No evidence of metastasis.

ND57 (P30194), female, 70 years.
Radical dissection of right neck (unilateral procedure). Previous resection of SCC, skin of cheek.
Two metastatic masses: level I(1), parotid-level II(1).
Eight positive nodes: level I(1), level II(4), level III(2),
level IV(1).

ND58 (P30298), male, 65 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T4 SCC, anterior floor of mouth.
No evidence of metastasis.

ND59 (P30298), male, 65 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T4 SCC, anterior floor of mouth.
No evidence of metastasis.

ND60 (P30333), male, 47 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of residual T4 SCC, right oropharynx (pre-operative chemotherapy and radiotherapy).
Intranodal keratin granulomata: level II.

ND61 (P30484), female, 64 years.
Functional dissection of left neck (unilateral procedure) simultaneous with resection of recurrence of T2 SCC, left oropharynx (pre-operative radiotherapy).
No evidence of metastasis.

ND62 (P30528), male, 63 years.
Radical dissection of left neck (unilateral procedure). Previous resection of T3 SCC, right oropharynx and radical dissection of right neck, followed by chemotherapy and radiotherapy.
Three metastatic masses: level II-IV(1), level IV(2).
One positive node: level V.

ND63 (P30639), male, 64 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
No evidence of metastasis.

ND64 (P30639), male, 64 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
Three positive nodes: level I(2), level II(1).

ND65 (P30676), female, 81 years.
Supra-omohyoid dissection of left neck (unilateral procedure) in continuity with resection of T4 SCC, left lower alveolar ridge.
No evidence of metastasis.

ND66 (P30851), male, 52 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of residual T4 SCC, left retromolar trigone (pre-operative chemotherapy).
One metastatic mass: level II-V.
Seven positive nodes: level I(4), level II(2), level IV(1).

ND67 (P30938), male, 57 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of residual T4 SCC, oropharynx (pre-operative radiotherapy).
Extranodal keratin granulomata: level II.

ND68 (P30938), male, 57 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of residual T4 SCC, oropharynx (pre-operative radiotherapy).
Intranodal keratin granulomata: level II.

ND69 (P30968), female, 68 years.
Functional dissection of left neck (unilateral procedure). Clinically covert primary SCC.
One metastatic mass: level I.
Two positive nodes: level I.

ND70 (P30983), male, 55 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of residual T4 SCC, left oropharynx (pre-operative chemotherapy and radiotherapy).
One positive node: level IV.
Intranodal keratin granulomata: level II.

ND71 (P30983), male, 55 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of residual T4 SCC, left oropharynx (pre-operative chemotherapy and radiotherapy).
Two positive nodes: level IV.

ND72 (P31036), male, 46 years.
Radical dissection of left neck (bilateral procedure) in continuity with resection of T4 SCC, left floor of mouth.
Two metastatic masses: level II(1), level IV(1).

ND73 (P31036), male, 46 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T4 SCC, left floor of mouth.
No evidence of metastasis.

ND74 (P31094), male, 52 years.
Radical dissection of right neck (unilateral procedure). Previous resection of T1 SCC, anterior floor of mouth and bilateral suprahyoid dissections (ND37 and ND38), followed by radiotherapy.
One metastatic mass: level I-II.

ND75 (P31146), male, 64 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, anterior floor of mouth.
No evidence of metastasis.

ND76 (P31146), male, 64 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T2 SCC, anterior floor of mouth.
No evidence of metastasis.

ND77 (P31161), female, 75 years.
Radical dissection of right neck (unilateral procedure). Previous resection of synchronous T1 SCCs, dorsum and undersurface of left oral tongue and lower lip and radical dissection of left neck (ND12), followed by radiotherapy.
One metastatic mass: level III-IV.

ND78 (P31188), male, 67 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of malignant melanoma, infra-auricular skin.
Metastatic malignant melanoma.

ND79 (P31402), male, 58 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of residual T4 SCC, left lower alveolar ridge (pre-operative chemotherapy).
No evidence of metastasis.

ND80 (P31402), male, 58 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of residual T4 SCC, left lower alveolar ridge (pre-operative chemotherapy).
No evidence of metastasis.

ND81 (P31436), male, 53 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of residual T4 SCC, left oropharynx (pre-operative chemotherapy).
Two metastatic masses: level I(1), level II-III(1).
Two positive nodes: level III(2).

ND82 (P31471), male, 63 years.
Radical dissection of right neck in continuity with resection of T1 SCC, right oropharynx (unilateral procedure). Previous surgery and radiotherapy for two metachronous SCCs, supraglottic region and larynx.
One metastatic mass: level I.

ND83 (P31513), male, 51 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND84 (P31513), male, 51 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
One metastatic mass: level I.

ND85 (P31539), male, 45 years.
Supra-omohyoid dissection of right neck (unilateral procedure) in continuity with resection of T1 SCC, right oral tongue.
No evidence of metastasis.

ND86 (P31584), female, 64 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left lower alveolar ridge.
No evidence of metastasis.

ND87 (P31624), female, 77 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of recurrent mucoepidermoid carcinoma, left oropharynx.
Metastatic mucoepidermoid carcinoma.

ND88 (P31655), male, 58 years.
Functional dissection of right neck (unilateral procedure) simultaneous with resection of recurrence of SCC, right floor of mouth. Previous resection of T1 SCC, right floor of mouth and suprahyoid dissection of right neck.
No evidence of metastasis.

ND89 (P31730), male, 52 years.
Radical dissection of left neck (unilateral procedure). Previous resection of T1 SCC, anterior floor of mouth and bilateral suprahyoid dissections (ND37 and ND38), followed by radiotherapy and radical dissection of right neck (ND74).
One metastatic mass: level I-II.
One positive node: level II.

ND90 (P31794), female, 72 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right lower alveolar ridge.
No evidence of metastasis.

ND91 (P31900), female, 53 years.
Supra-omohyoid dissection of left neck (unilateral procedure) simultaneous with resection of adenoid cystic carcinoma, left buccal mucosa.
Metastatic adenoid cystic carcinoma.

ND92 (P31921), female, 79 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T3 SCC, right oral tongue.
No evidence of metastasis.

ND93 (P31921), female, 79 years.
Radical dissection of right neck (bilateral procedure) in continuity with resection of T3 SCC, right oral tongue.
No evidence of metastasis.

ND94 (P31940), male, 68 years.
Radical dissection of left neck (bilateral procedure) in continuity with resection of T4 SCC, anterior floor of mouth.
One positive node: level I(1).

ND95 (P31940), male, 68 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T4 SCC, anterior floor of mouth.
No evidence of metastasis.

ND96 (P32000), female, 63 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of T4 SCC, left floor of mouth.
Two positive nodes: level I(1), level II(1).

ND97 (P32001), male, 53 years.
Functional dissection of right neck (unilateral procedure). Previous resection of adenoid cystic carcinoma of left parotid and radical dissection of left neck.
Metastatic papillary adenocarcinoma of thyroid.

ND98 (P32046), male, 50 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of T4 SCC, left lower alveolar ridge.
No evidence of metastasis.

ND99 (P32088), female, 33 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right buccal mucosa.
No evidence of metastasis.

ND100 (P32124), female, 85 years.
Radical dissection of left neck (unilateral procedure). Previous resection of T2 SCC, left oral tongue and suprahyoid dissection of left neck, followed by radiotherapy.
One metastatic mass: level II-IV.
One positive node: level V.

ND101 (P32158), female, 76 years.
Functional dissection of left neck (unilateral procedure) simultaneous with resection of T4 SCC, left maxillary antrum.
One metastatic mass: level I.

ND102 (P32195), male, 78 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right lower alveolar ridge.
One positive node: level I.

ND103 (P32301), male, 39 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of malignant melanoma, infra-auricular skin.
Metastatic malignant melanoma.

ND104 (P32372), male, 74 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T4 SCC, anterior lower alveolar ridge.
No evidence of metastasis.

ND105 (P32372), male, 74 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T4 SCC, anterior lower alveolar ridge.
No evidence of metastasis.

ND106 (P32420), female, 63 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
Two positive nodes: level I.

ND107 (P32420), female, 63 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
One positive node: level I.

ND108 (P32449), male, 51 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of T4 SCC, left oropharynx.
Four metastatic masses: level II-V(1), II-III(2), level IV-V(1).
Six positive nodes: level III(1), level IV(3), level V(2).

ND109 (P32450), male, 53 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T4 SCC, left floor of mouth.
One positive node: level II.

ND110 (P32457), female, 65 years.
Radical dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right oral tongue.
One metastatic mass: level I-IV.
Five positive nodes: level IV(1), V(4).

ND111 (P32483), female, 77 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right floor of mouth.
Two positive nodes: level II.

ND112 (P32531), female, 61 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, left oral tongue.
Two positive nodes: level I.

ND113 (P32531), female, 61 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T2 SCC, left oral tongue.
No evidence of metastasis.

ND114 (P32541), female, 63 years.
Radical dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, left floor of mouth.
One metastatic mass: level II.
Three positive nodes: level I(2), level III(1).

ND115 (P32541), female, 63 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T2 SCC, left floor of mouth.
One positive node: level I.

ND116 (P32570), female, 61 years.
Supra-omohyoid dissection of left neck (unilateral procedure) simultaneous with resection of T1 SCC, left oropharynx.
No evidence of metastasis.

ND117 (P32618), male, 43 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND118 (P32618), male, 43 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
One positive node: level I.

ND119 (P32689), female, 45 years.
Supra-omohyoid dissection of left neck (unilateral procedure) in continuity with resection of polymorphous low-grade adenocarcinoma, left retromolar trigone.
No evidence of metastasis.

ND120 (P32722), male, 66 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
Five positive nodes: level I(1), level II(3), level III(1).

ND121 (P32723), male, 85 years.
Radical dissection of right neck (unilateral procedure). Previous resection of malignant melanoma of hard palate.
Metastatic malignant melanoma.

ND122 (P32738), male, 72 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of two synchronous T1 SCCs, lateral and undersurface of left oral tongue.
Two positive nodes: level II(1), level III(1).

ND123 (P32781), female, 39 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of recurrence of adenoid cystic carcinoma of right parotid.
No evidence of metastasis.

ND124 (P32812), male, 49 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right oropharynx.
No evidence of metastasis.

ND125 (P32855), female, 43 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right buccal mucosa.
Three positive nodes: level I.

ND126 (P32856), male, 71 years.
Radical dissection of right neck (unilateral procedure). Previous resection of T1 SCC, right retromolar trigone.
One metastatic mass: level II.
One positive node: level II.

ND127 (P32889), female, 34 years.
Functional dissection of right neck (unilateral procedure). Previous resection of carcinoid tumour, right lung.
Metastatic carcinoid tumour.

ND128 (P32890), male, 79 years.
Supra-omohyoid dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left retromolar trigone.
No evidence of metastasis.

ND129 (P32891), male, 63 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
One positive node: level II.

ND130 (P32918), female, 59 years.
Radical dissection of left neck (unilateral procedure) in continuity with resection of carcinoma ex pleomorphic adenoma, left parotid. Metastatic adenocarcinoma.

ND131 (P32956), female, 75 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right lower alveolar ridge. No evidence of metastasis.

ND132 (P32976), male, 74 years.
Supra-omohyoid dissection of right neck (unilateral procedure) in continuity with resection of T1 SCC, right floor of mouth. No evidence of metastasis.

ND133 (P32978), male, 72 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of residual T2 SCC, left oral tongue (pre-operative radiotherapy).
One positive node: level II.

ND134 (P33033), male, 37 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T3 SCC, left oral tongue. No evidence of metastasis.

ND135 (P33071), male, 71 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right floor of mouth.
One metastatic mass: level II.
Four positive nodes: level II(1), level III(1), level IV(1), level V(1).

ND136 (P33091), male, 56 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, left floor of mouth.
One positive node: level II.

ND137 (P33091), male, 56 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T2 SCC, left floor of mouth. No evidence of metastasis.

ND138 (P33129), female, 57 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth. No evidence of metastasis.

ND139 (P33129), female, 57 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth. No evidence of metastasis.

ND140 (P33169), female, 76 years.

Supra-omohyoid dissection of right neck (unilateral procedure) simultaneous with resection of recurrence of T1 SCC, right buccal mucosa (previous radiotherapy).

No evidence of metastasis.

ND141 (P33231), male, 63 years.

Radical dissection of left neck (bilateral procedure) simultaneous with resection of two synchronous T1 SCCs, left oropharynx.

One metastatic mass: level II.

ND142 (P33231), male, 63 years.

Functional dissection of right neck (bilateral procedure) simultaneous with resection of two synchronous T1 SCCs, left oropharynx.

One metastatic mass: level II.

ND143 (P33243), female, 56 years.

Functional dissection of left neck (unilateral procedure) in continuity with resection of malignant melanoma, infra-auricular skin.

No evidence of metastasis.

ND144 (P32273), male, 81 years.

Supra-omohyoid dissection of left neck (unilateral procedure) in continuity with resection of T2 SCC, left oral tongue.

Three positive nodes: level I(1), level II(1), level III(1).

ND145 (P33285), male, 55 years.

Radical dissection of right neck (unilateral procedure). Previous resection of T1 SCC, right floor of mouth and suprahyoid dissection of right neck (ND24).

One metastatic mass: level III-IV.

ND146 (P33342), male, 54 years.

Radical dissection of left neck (bilateral procedure) in continuity with resection of residual T4 SCC, left retromolar trigone (pre-operative chemotherapy and radiotherapy).

One metastatic mass: level I-V.

Five positive nodes: level IV(4), level V(1).

ND147 (P33342), male, 54 years.

Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of residual T4 SCC, left retromolar trigone (pre-operative chemotherapy and radiotherapy).

No evidence of metastasis.

ND148 (P33353), male, 78 years.

Functional dissection of left neck (unilateral procedure). Previous resection of T4 SCC, right lower alveolar ridge and functional dissection of right neck (ND102).

One metastatic mass: level II-III.

ND149 (P33381), male, 63 years.

Functional dissection of left neck (unilateral procedure) in continuity with resection of T4 SCC, left maxillary antrum.

No evidence of metastasis.

ND150 (P33463), female, 51 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of recurrence of carcinoma ex pleomorphic adenoma, right submandibular gland.
No evidence of metastasis.

ND151 (P33463), female, 51 years.
Radical dissection of right neck (bilateral procedure) in continuity with resection of recurrence of carcinoma ex pleomorphic adenoma, right submandibular gland.
No evidence of metastasis.

ND152 (P33485), male, 60 years.
Functional dissection of left neck (bilateral procedure) in continuity with resection of T2 SCC, left oral tongue.
Two positive nodes: level I.

ND153 (P33485), male, 60 years.
Functional dissection of right neck (bilateral procedure) simultaneous with resection of T2 SCC, left oral tongue.
No evidence of metastasis.

ND154 (P33527), female, 58 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND155 (P33527), female, 58 years.
Supra-omohyoid dissection of right neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND156 (P33566), male, 50 years.
Supra-omohyoid dissection of left neck (bilateral procedure) simultaneous with resection of T4 SCC, right oropharynx.
No evidence of metastasis.

ND157 (P33566), male, 50 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T4 SCC, right oropharynx.
Two positive nodes: level II.

ND158 (P33575), male, 43 years.
Radical dissection of left neck (bilateral procedure) in continuity with resection of T3 SCC, left oropharynx.
One positive node: level II.

ND159 (P33575), male, 43 years.
Functional dissection of right neck (bilateral procedure) simultaneous with resection of T3 SCC, left oropharynx.
No evidence of metastasis.

ND160 (P33617), male, 77 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of recurrence of T4 SCC, right lower alveolar ridge (previous radiotherapy).
No evidence of metastasis.

ND161 (P33671), male, 50 years.
Supra-omohyoid dissection of left neck (bilateral procedure) simultaneous with resection of T4 SCC, right lower alveolar ridge.
No evidence of metastasis.

ND162 (P33671), male, 50 years.
Functional dissection of right neck (bilateral procedure) in continuity with resection of T4 SCC, right lower alveolar ridge.
No evidence of metastasis.

ND163 (P33687), female, 74 years.
Functional dissection of right neck (unilateral procedure) simultaneous with resection of recurrence of T1 SCC, left buccal mucosa. Previous functional dissection of left neck (ND8), followed by radiotherapy.
Six positive nodes: level I(3), level II(1), level III(1),
level IV(1).

ND164 (P33711), female, 61 years.
Radical dissection of right neck (unilateral procedure). Previous resection of T2 SCC, left oral tongue, functional dissection of left neck (ND112) and supra-omohyoid dissection of right neck (ND113).
One metastatic mass: level IV-V.

ND165 (P33712), male, 55 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left buccal mucosa.
No evidence of metastasis.

ND166 (P33713), male, 76 years.
Supra-omohyoid dissection of left neck (bilateral procedure) in continuity with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND167 (P33713), male, 76 years.
Supra-omohyoid dissection of right neck (bilateral procedure) simultaneous with resection of T1 SCC, anterior floor of mouth.
No evidence of metastasis.

ND168 (P33738), male, 77 years.
Radical dissection of left neck (unilateral procedure). Previous resection of SCC, skin of left temple.
Three positive nodes: parotid gland.

ND169 (P33739), male, 64 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left floor of mouth.
No evidence of metastasis.

ND170 (P33744), male, 56 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T1 SCC, right floor of mouth.
Nine positive nodes: level I(1), level II(2), level III(2),
level IV(4).

ND171 (P00012), female, 49 years.
Supra-omohyoid dissection of left neck (unilateral procedure) in continuity with resection of T1 SCC, left floor of mouth.
Three positive nodes: level I(2), level II(1).

ND172 (P00051), male, 48 years.
Supra-omohyoid dissection of left neck (bilateral procedure). Previous resection of malignant melanoma, lower lip.
No evidence of metastasis.

ND173 (P00051), male, 48 years.
Supraomohyoid dissection of right neck (bilateral procedure). Previous resection of malignant melanoma, lower lip.
No evidence of metastasis.

ND174 (P00074), male, 52 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T4 SCC, right retromolar trigone.
Two positive nodes: level II.

ND175 (P00090), male, 42 years.
Functional dissection of left neck (unilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
Two positive nodes: level II(1), level III(1).

ND176 (P00127), male, 72 years.
Functional dissection of right neck (unilateral procedure) in continuity with resection of T2 SCC, right oral tongue.
Six positive nodes: level II(3), level III(2), level IV(1).

Appendix 3.

AMERICAN JOINT COMMITTEE ON CANCER (1988) TNM CLASSIFICATION
DEFINITIONS OF ANATOMICAL SITES

Oral Cavity

Buccal Mucosa. This includes all the mucous membrane lining the inner surface of the cheeks and lips from the line of contact of the opposing lips to the line of attachment of mucosa of the alveolar ridge (upper and lower) and pterygomandibular raphe.

Lower Alveolar Ridge. The ridge includes the alveolar process of the mandible and its covering mucosa, which extends from the line of attachment of mucosa in the buccal gutter to the line of free mucosa of the floor of the mouth. Posteriorly it extends to the ascending ramus of the mandible.

Upper Alveolar Ridge. The upper ridge is the alveolar process of the maxilla and its covering mucosa, which extends from the line of attachment of mucosa in the upper gingival buccal gutter to the junction of the hard palate. Its posterior margin is the upper end of the pterygopalatine arch.

Retromolar Trigone. This is the attached mucosa overlying the ascending ramus of the mandible from the level of the posterior surface of the last molar tooth to the apex superiorly, adjacent to the tuberosity of the maxilla.

Floor of Mouth. This is a semilunar space over the mylohyoid and hyoglossus muscles, extending from the inner surface of the lower alveolar ridge to the undersurface of the tongue. Its posterior boundary is the base of the anterior pillar of the tonsil.

Hard Palate. This is the semilunar area between the upper alveolar ridge and the mucous membrane covering the palatine process of the maxillary palatine bones. It extends from the inner surface of the upper alveolar ridge to the posterior edge of the palatine bone.

Oral Tongue. This is the freely mobile portion of the tongue that extends anteriorly from the line of circumvallate papillae to the undersurface of the tongue at the junction of the floor of the mouth. It is composed of four areas: the tip, the lateral borders, the dorsum and the undersurface.

Oropharynx

The boundaries of the oropharynx are:

Anterior wall (glosso-epiglottic area), formed by the tongue posterior to the vallate papillae (base of tongue or posterior third) and the vallecula.

Lateral wall, formed by the tonsil, the tonsillar fossa and faucial pillars, and the glosso-tonsillar sulci.

Posterior wall.

Superior wall, formed by the inferior surface of soft palate and the uvula.

Section 4.

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