|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Study** | **Location** | **Type** | **Indication for antireflux surgery** | **Antireflux procedure** |
| Brown et al. 1997 [27] | Cape Town, South Africa | ?prospective observational study | GERD refractory to medical management; GERD based on symptoms and panel of investigation | Boix Ochoa (?open) |
| Capito et al. 2008 [28] | Nantes, France | Prospective observational study | pH-study confirmed GERD refractory to medical treatment | Laparoscopic Nissen-Rossetti +/- gastrostomy |
| Engelmann et al. 2010 [20] | Hannover, Germany | Prospective observational study | pH-study confirmed GERD - 17 esophagitis, 23 recurent bronchitis etc. but not specifically listed as indications and pre-operative medical interventions unclear | Laparoscopic anterior 270° fundoplication and gastrostomy |
| Goessler et al. 2007 [29] | Graz, Austria | Retrospective observational study | ‘Pathologic GERD’ but definition unclear | Nissen, Thal or Toupet +/- gastrostomy +/- pyloroplasty/otomy (?open or laparoscopic) |
| Granell et al. 2015 [30] | Lund, Sweden | Prospective observational study | Unclear however all children had pre-operative pH study, endoscopy, and were on PPIs | Robotic Nissen +/- gastrostomy |
| Jolley et al. 1987 [31] | Oklahoma, USA | ?prospective observational study | pH-study confirmed GERD | Open Nissen, Thal or Boerema gastropexy +/- gastrostomy |
| Mauritz et al. 2016 [23], Mauritz et al. 2016 [24], Rinsma et al. 2016 [25] | Three centres, the Netherlands | Prospective observational study | PPI therapy-  resistant GERD confirmed with pH-study, breath test and reflux questionnaire | Laparoscopic Thal or Nissen |
| Noble et al. 1982 [32] | Seattle, USA | ?retrospective case series | Complicated GERD (failure to thrive, respiratory disease, stricture, etc.) after failed medical therapy and confirmed by pre-operative ‘testing’ | Open Nissen +/- gastrostomy |
| Srivastava et al. 2007 [26] | Salt Lake City, USA | Prospective observational study | GERD as defined by NASPGHAN refractory to medical management | Open or laparoscopic Nissen and gastrostomy |
| Tovar et al. 1998 [33] | Madrid, Spain | ?prospective observational study | GERD diagnosed by clinical symptoms, contrast study, pH-study, and endoscopic  biopsy | Laparoscopic Nissen +/- gastrostomy |
| van der Zee et al. 1999 [21] and Mauritz et al. 2014 [22] | Utrecht, the Netherlands | Prospective observational study | In >44, pH-study confirmed GERD, and in >25 esophagitis, although ‘break-down’ of indications unclear | Laparoscopic Thal +/- gastrostomy |

Table 2: summarizes the final studies included in the review.