Italian multicenter survey on laparoscopic treatment of gastro-esophageal reflux disease in children

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Abstract

Background: Skepticism is still present today about the laparoscopic treatment of gastro-esophageal reflux (GER) in children. We present the prospective experience and short-term results of eight Italian pediatric surgical units.

Methods: We included all the children with complicated GER, operated after January 1998 by single surgeons from eight different centers. Diagnostic aspects, type of fundoplication, and complications were considered. All the patients were followed for a minimum period of 6 months in order to detect complications or recurrences.

Results: 288 children were prospectively included. Mean age was 4.8 years (3 m–14 y). Nissen fundoplication was done in 25%, floppy Nissen in 63%, Toupet in 1.7%, and anterior procedures (Lortat Jacob, Thal) in 10%. Gastrostomy was associated, if neurological impairment or feeding disorders were present. Mean follow-up was 15 months and reoperation was necessary in 3.8% of cases.

Conclusions: This experience underlines that minimal invasive access surgery in children is safe and that the laparoscopic approach is considered in eight centers the golden standard for surgical repair of gastro-esophageal reflux disease maintaining the same indications and techniques of the open approach.

Key words: Laparoscopy — Nissen — Rossetti — Fundoplication — Gastro-esophageal reflux

In the last years the minimal invasive access procedures have become frequent also in pediatric patients [1, 2, 4–6, 8]. However, there are still doubts, particularly in the treatment of gastro-esophageal reflux, because many surgeons do not agree with this approach even if many publications demonstrated its good outcome also in young patients [3, 7, 9].

The authors present the surgical experience and short-term results of eight Italian pediatric surgical units in the laparoscopic treatment of gastro-esophageal reflux (GER) to demonstrate the safety and feasibility of this approach in children.

Materials and methods

A multicenter survey was carried out. Eight surgeons, coming from eight different pediatric surgical units with a long experience in laparoscopic surgery, prepared a form to be filled in during the procedure. A summary of the collected data was analyzed in double-blind manner.

Inclusion criteria were age less than 14 years, operation performed after January 1998 by a single surgeon in each center, and minimum postoperative period of 6 months.

Diagnostic aspects were considered for all the patients including main symptoms (esophagitis, hiatal hernia, asthma, infections), associated disease (mainly neurological impairment and repaired esophageal atresia), and examinations performed to confirm the diagnosis (pHmetry, barium meal X-ray, endoscopy, bronchoalveolar lavage, gastric emptying time, manometry).

The kind of gastropexy performed was considered, focusing on details such as short gastric vessel ligation, lesser omentum resection, hiataloplasty, and gastric drainage (naso gastric tube and gastrostomy). Type of gastropexy included the 360° wrap (Nissen or Nissen–Rossetti) and the partial gastropexy, mainly posterior (Toupet) or anterior and lateral (Thal, or Lortat Jacobs).

All the patients were followed for a minimum period of 6 months, undergoing clinical evaluation and, in case of symptoms, barium meal
X-ray and pH analysis to detect complications or recurrences. Minor symptoms such as mild dysphagia or pain were not evaluated.

Results

Data are shown in detail for each center in Tables 1 and 2.

In summary, 288 children were included. Mean age was 4.8 years (3 m–14 y). Esophagitis was the main symptom in 182 cases (63%), asthma in 53 (18%), respiratory infections in 80 (28%). Hiatal hernia was present in 84 (29%) and associated diseases in 101 (35%), namely neurological impairment in 73 (25%) and previous TEF in 12 (4%).

Esophageal pHmetry was performed in 252 cases (89%), endoscopy in 211 (74%), upper GI tract barium meal X-ray in 270 (94%), gastro-duodenal transit time in 33 (12%), and respiratory tract endoscopy in 31 (11%).

Nissen fundoplication was done in 72 cases (25%), floppy Nissen–Rossetti in 182 (63%), Toupet in 5 (1.7%), and anterior procedures in 29 (10%). Sectioning of the lesser omentum was routinely performed in all the cases of four centers and no resection of the short gastric vessels was performed in six centers. The nasogastric tube was maintained for at least 24 hours in six centers. Gastrostomy was always associated, if neurological impairment or feeding disorders were present.

Intraoperative complications included one case of esophageal perforation, one of gastric perforation, and one pleural opening. All the complications were successfully treated during the same procedure.

Correlation between type of surgery (subgroups) and outcome was not evaluated. Mean follow-up was 15 months (6–54). Eleven children (3.8%) needed reoperation, 2 of them for stricture of the wrap and 9 for recurrence of GER.

Discussion

Aim of this survey was to demonstrate the feasibility and safety of the laparoscopic approach in pediatric patients. All the centers maintained the same inclusion