Giant paraesophageal hiatal hernias: the role of digital fluoroscopy after direct hiatus closure.

Poster No.: C-1134
Congress: ECR 2012
Type: Scientific Exhibit
Authors: P. Bemi, P. Giusti, E. Fruzzetti, G. Zingoni, E. Perrone, M. Marchetti, B. Pontillo Contillo, C. Bartolozzi; Pisa/IT
Keywords: Gastrointestinal tract, Stomach (incl. Oesophagus), Fluoroscopy, Diagnostic procedure, Hernia
DOI: 10.1594/ecr2012/C-1134

Any information contained in this pdf file is automatically generated from digital material submitted to EPOS by third parties in the form of scientific presentations. References to any names, marks, products, or services of third parties or hypertext links to third-party sites or information are provided solely as a convenience to you and do not in any way constitute or imply ECR's endorsement, sponsorship or recommendation of the third party, information, product or service. ECR is not responsible for the content of these pages and does not make any representations regarding the content or accuracy of material in this file.

As per copyright regulations, any unauthorised use of the material or parts thereof as well as commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is strictly prohibited.

You agree to defend, indemnify, and hold ECR harmless from and against any and all claims, damages, costs, and expenses, including attorneys' fees, arising from or related to your use of these pages.

Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

www.myESR.org
Purpose

Thanks to the improvement of laparoscopic surgical techniques, from early 1990 we assisted to a shift of surgical approach as regard to many patologies as gallbladder calcolosis, hiatal and of course paraesophageal hernia. In particular, the advantages of laparoscopy, including reduced postoperative pain and rapid convalescence, convinced surgeons to apply laparoscopic approach in treatment of giant paraesophageal hiatal hernias (more than 1/3 of stomach migrated with or without other organs). From this time many studies has been done to evaluate usefulness and feasibility of laparoscopy: in 2000 a report of Hashemi and colleagues from University of California pointed out a recurrence of 42% in a median time of 17 months [1], in 2004 Andujar and co. pointed out a 5% of paraesophageal hernia recurrence, a 20% of sliding hernia recurrence and a 3% of wrap failure in a median time of 15 months [2], in 2008 Nason and colleagues pointed out a recurrence of 15% in a median time of 51 months [3]. Each study had been carried out thanks to the contribution of Digital Fluoroscopy, which demonstrated to play a foundamental role in evaluation of these patients, since it represents the most effective and easy exam to evaluate local complications in early and late post-operative period. Our purpose is to evaluate the role of Digital Fluoroscopic (DF) swallow study usefulness in patients treated with laparoscopic repair of "giant" hiatal hernias with direct closure of the hiatus.
Methods and Materials

From January 2000 to March 2010, 38 patients affected by type III and IV paraesophageal hiatal hernia were treated: 26 type III (68.4%) and 12 type IV (31.6%). They were 12 males and 26 females, between 36 and 83 years old (median age 62).

A 360-degree Nissen fundoplication was performed in 22 patients and a 270-degree Toupet fundoplication in 16 patients. DF swallow examination was performed in all patients both in early post-operative period within three days from surgery, and in late period after one month and after one year from surgery, and repeated during further follow-up.
Results

In early post-operative period complications occurred in three patients: a hemoperitoneum, a pulmonary embolism and an early recurrence on first postoperative day, due to a strong vomiting, which was pointed out with an urgent DF swallow study and required an immediate laparoscopic operation. In late period further fluoroscopic controls pointed out a recurrence rate of 13.1% (5/38). DF swallow study permitted to rule out recurrence of pathologic hernia in 5 patients (13.1%): three (7.9%) were fully asymptomatic while two (5.2%) underwent an operation again.
Conclusion

Digital fluoroscopy swallow study is a fast, well tolerated and reliable diagnostic procedure which plays a fundamental role in post surgical follow up of patients treated for numerous gastroesophageal diseases, as giant paraesophageal hiatal hernias. Obviously the radiologist must be aware of surgical techniques in order to correctly evaluate the images. In Nissen fundoplication the fundus is wrapped posteriorly around the distal esophagus and lower esophageal sphincter, and then sutured anteriorly making a complete 360° wrap. Digital fluoroscopy (DF) reveals a typical subdiaphragmatic circumferential defect of stomach fundus, which causes a smooth narrowing of contrast column passing through distal oesophagus, extending for approximately 2-3 cm. Like Nissen fundoplication, Toupet fundoplication involves wrapping the fundus posterior to the oesophagus; however, the result is not a complete 360° wrap but an approximately 270° wrap, anchored to the crus and the oesophagus. DF demonstrates a partial posterior wrap filled with contrast media, a finding that does not necessarily indicate wrap dehiscence. It is not always possible to differentiate between a Toupet fundoplication and a Nissen fundoplication at radiography [4]. However contrast examination can rule out eventual complications as complete or partial dehiscence with hernia recurrence, leaks, excessive wrap narrowing causing transit obstruction (in early post-operative period mainly due to local edema rather than a surgeon mistake, in late period mainly due to cicatrization), gastroesophageal reflux disease, and slipped wrap. A recurrent hernia should not be confused with a slipped fundoplication, which occurs when the fundoplication slips distally and encircles the stomach rather than the gastroesophageal junction. Obstruction appears as a distal oesophagus emptying delay with possible air-fluid level proximally to the fundoplication: in early post-operative period is usually due to local edema, and a second look after 2 weeks can be useful to prove a normal acquired canalization. In late period it is rather related with local cicatrization: the patient can refer abdominal distension and impossibility to erupt (gas bloat syndrome). Esophagogram can show excessive constriction and fixity of the organ passing through the fundoplication with proximal distension. Leak is a typical early postoperative complication: it appears as passage of contrast material out of the lumen. It’s an emergency and requires an immediate re-operation. In order to avoid peritonitis, early postoperative swallow controls must be conducted using hydrosoluble iodinated contrast media. A complete dehiscence consists of a complete rupture of suture line stitchies and is radiographically visualized as hernia and gastroesophageal reflux disease recurrence in absence of fundoplication signs. A partial dehiscence appears as a partially complete fundoplication associated with gastric fundus extroflession and gastroesophageal reflux disease.

In conclusion, it’s necessary remember that a collaboration between the surgeon and the radiologist is necessary to guarantee a good management of patient health, since improvement of surgery technique permitted a reduction of complication rate, and DF study represents an fundamental exam to evaluate possible complications.
References


Personal Information

Pietro Bemi MD.

Department of Diagnostic and Interventional Radiology, University Hospital of Pisa, Italy.

E-mail: pietro.bemi@gmail.com