

Short reports

A modified Pearson gastroplasty

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The surgical management of acquired short oesophagus with a dilatable stricture remains a controversial subject. The morbidity and mortality associated with resection, added to the theoretical desirability of preserving a functional oesophagogastric junction, led to the so called oesophageal lengthening gastroplasties. Pearson¹ added a Belsey mark IV type 270° partial fundoplication² to the Collis gastroplasty^{3,4} to achieve a tubular extension of the oesophagus with an antireflux mechanism at its lower end. Although commonly described as a Collis-Belsey gastroplasty, both Collis and Belsey⁵ have at one time or another dissociated themselves from the operation. We prefer to call it the Pearson gastroplasty.

The creation of a tube of oesophagus by the application of two clamps parallel to the lesser curve of the stomach, with division between the clamps, results in considerable loss of gastric fundal area. The distorted conical neofundus that results from the reconstruction makes a 270° Belsey mark IV fundoplication difficult. Henderson⁶ and Orringer⁷ have independently incorporated a Nissen type 360° fundoplication around the tube because the conical neofundus is suitable for this manoeuvre. While accepting that the Nissen fundoplication achieves a more successful antireflux mechanism we, like Pearson,⁸ consider that absolute control of reflux is not the sole objective of such an operation. The patient should be capable of swallowing comfortably and be able to belch and vomit if the occasion demands. We have therefore modified the Pearson gastroplasty to overcome the distortion and reduction in the neofundal area, thereby making a Belsey type 270° fundoplication an easier procedure.

Surgical technique

Exposure is obtained through the 6th or 7th intercostal space on the left side. The entire procedure is carried out through the left chest without extending the incision into the abdomen or opening the diaphragm, except in those patients who have had previous surgery on the oesophagogastric junction. In these patients a 5 cm arcuate incision in the aponeurotic area of the diaphragm enables

and below the diaphragm, for safer dissection without damage to the underlying spleen, which may be adherent to the stomach or the diaphragm.

The mobilisation of the lower oesophagus and upper stomach is carried out exactly as for the Belsey mark IV procedure. At this stage, when it is clear that severe shortening precludes a standard Belsey repair, and the criteria in the table are satisfied, the decision is made to proceed to a gastroplasty.

Two non-crushing clamps are applied parallel to the lesser curve with a bougie in position, as for a Pearson gastroplasty. The length of the incision on the stomach is approximately 5 cm. Closure of the neo-oesophagus is achieved with two layers of 2/0 chromic catgut by hand suture (fig 1). On occasion the stapler has been used for this half of the suture line. The suture of the gastric neofundal portion is carried out transversely, again with two layers of 2/0 chromic catgut sutures (figs 2 and 3). This results in a suture line with a vertical limb in the neo-oesophagus and a transverse limb in the neofundus. The neofundus is no longer conical and distorted but rounded and normal looking. This enables a proper 270° fundoplication of the neofundus around the neo-oesophagus (fig 4). Furthermore, the separate closure of the vertical and transverse limbs enables a modification of the length of the neo-oesophagus according to the needs of the patient. In the standard Pearson gastroplasty elongation of the oesophageal tube can be achieved only by deepening the incision into the stomach, thereby taking up more of the body of the stomach.

Once the gastroplasty is completed the Belsey mark IV repair is carried out in two layers incorporating a 270° fundoplication and a transcrural buttress; this results in a subdiaphragmatic segment of the neo-oesophagus of about 5-6 cm. Criticisms of a tricornered junction in the gastroplasty suture line are countered by the fact that (1) there is absolutely no tension on the suture line; (2) the blood supply in this area is abundant; and (3) the junction is com-

Criteria for modified Pearson gastroplasty

- | | | |
|---|---|--|
| 1 | Shortened oesophagus confirmed at the time of surgery as inadequate for a standard mark IV repair | |
| 2 | Easily dilatable stricture | |
| 3 | No penetrating ulcer in the oesophagus | |
| 4 | No evidence of malignancy | Based on quadrant biopsies on at least two occasions |
| | Barrett's oesophagus
epithelial metaplasia | |

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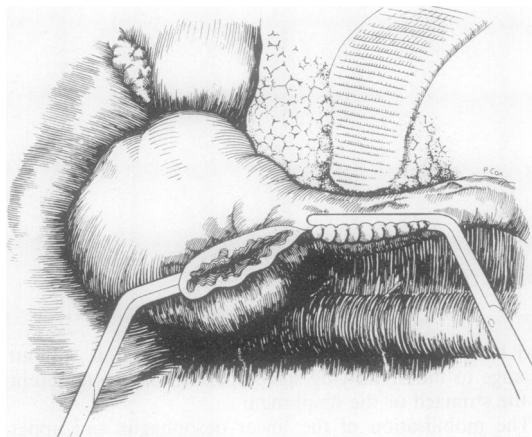


Fig 1 Closure of the length of the neo-oesophagus with hand suture.

pletely surrounded by the fundoplication and therefore not likely to dehiscence.

From July 1981 to June 1983 nine patients aged 44–80 years have undergone the modified Pearson gastroplasty. Follow up extends from two to 22 months, with clinical, radiological, endoscopic, manometric, and oesophageal pH assessment. Although the success of this modified technique must await long term evaluation, the early results have been encouraging. Figure 5 shows the typical preoperative and postoperative appearances of the barium swallow.

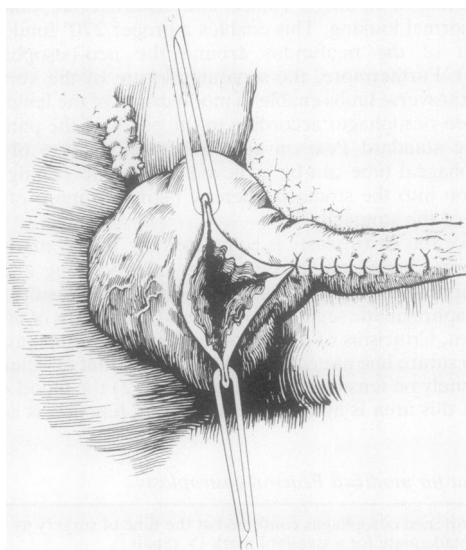


Fig 2 The gastric portion of the suture line is completed by splaying out the line of transection transversely and suturing it in two layers, great care being taken at the tricornered junction.

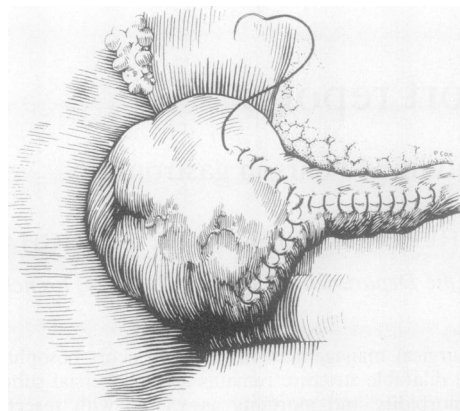


Fig 3 The completed Y shaped suture line with a neo-oesophagus of adequate length and diameter and a neofundus resembling the normal fundus in size and shape.

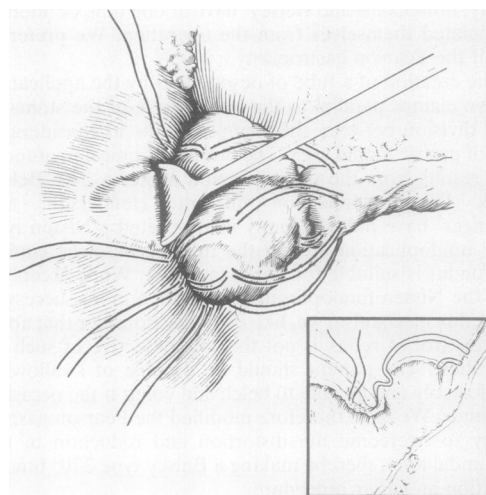


Fig 4 Completion of the Belsey-type fundoplication: in view of the extra tissue available three layers of angle reconstructing sutures are used, with four sutures in the final layer.

Discussion

This modification of the Pearson gastroplasty abolishes the distortion and size reduction of the neofundus. Without the distortion and as a result of the normal shape of the neofundus a proper Belsey type 270° fundoplication can be achieved. A V-Y plasty also permits variation in the length of the neo-oesophagus without excessive encroachment on the body of the stomach. Although the role of the proce-

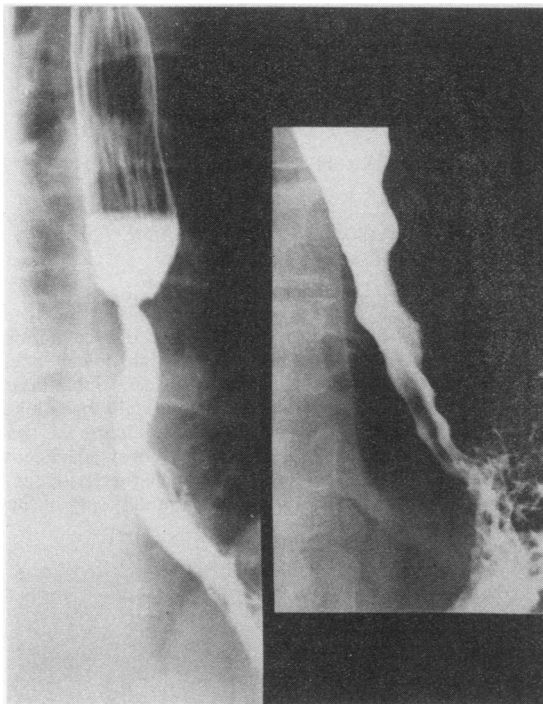


Fig 5 Preoperative and postoperative appearances of the barium swallow after the modified Pearson gastroplasty.

sure must await long term evaluation, the results so far suggest that it may prove a useful alternative to the Pearson procedure.

References

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Book notices

A Colour Atlas of Chest Trauma and Associated Injuries. Augustin Besson, Frederic Saegesser. (Pp 336; £48.) Wolfe Medical Publications. 1983.

The first volume of this excellent work has already been reviewed in *Thorax* (1983;38:270). This second and final volume deals with injuries to the tracheobronchial tree; the heart, pericardium, and thoracic great vessels; the diaphragm; and the oesophagus. All that needs to be said of these two volumes is that they are magnificently produced and should serve as a model of how to produce a medical reference book, irrespective of the subject under consideration. They are worth owning just for the quality of their production and the text is of an equally high standard. Other publishers please take note!—HRM

Pathophysiology and Techniques of Cardiopulmonary Bypass. Joe R Utley (editor). (Pp 253; £29.) Williams and Wilkins. 1983.

This book presents the essential infrastructure of cardiac surgery. It is the record of the cardiothoracic symposium in San Diego in 1982, which was the second of an innovative series of meetings with a multidisciplinary flavour. Topics often dealt with in a fragmentary manner in scientific journals are reviewed and presented in a balanced way in this volume. They include the influence of cardiopulmonary bypass on vasomotor tone, fluid balance, gas exchange, complement activation, and potassium kinetics. There are chapters concerning methods of surgical management such as the avoidance of air embolism, venting of the heart, the value of pulsatile perfusion, the use of filters, the constitution of cardioplegic solutions, and the role of deep hypothermia in adults. Finally, there are two chapters calculated to fascinate spectators of the United States scene. First there is a description of the steps needed to plan and carry out the clinical trials of new equipment, or devices for

implantation, to comply with the current requirements of the Food and Drug Administration. Secondly, a lawyer presents the medicolegal implications of cardiopulmonary bypass. This imaginative and worthwhile volume should be part of the library of those actively concerned with cardiac surgery whatever their discipline.—JDW

Notice

International symposium on prevention and detection of cancer

The Sixth International Symposium on Prevention and Detection of Cancer, sponsored by the International Society for Preventive Oncology, the World Health Organisation, the Austrian Cancer Society—Austrian Cancer League, and the US Association of Clinical Scientists, will be held in Vienna from 26 to 29 November. The programme includes lectures, panel discussions, poster sessions, scientific exhibits, and special workshops. Discussion will concentrate on the implementation of existing knowledge for effective cancer control by primary and secondary prevention. Reports will present progress in the understanding of the aetiology of oncogenesis, molecular biology, identification of high risk groups, tumour susceptibility, and the clinical and laboratory manifestations of cancer, including tumour markers. Abstracts of presentations are invited by 15 June 1984. *Inquiries by mail*: Prevention and Detection of Cancer, AMEX POB 790459, Dallas, TX 75379, USA. *Inquiries by phone*: In Europe: (Austria 43-222) 52-0544. Outside Europe: (USA-214) 392-3663. Toll free in USA: 1-800-527-0297.

Correction

A modified Pearson gastroplasty

We regret that in the short report by Dr KM Reilly and Mr K Jeyasingham (January 1984, p 67) the last line of the first column was omitted; the present last line should be followed by "visualisation of the oesophagogastric junction, both above."