ORIGINAL ARTICLE

Limited segmental anterior rectal resection for the treatment of rectovaginal endometriosis: pain and complications

J. English · N. Kenney · S. Edmonds · M. K. Baig · A. Miles

Abstract The aim of this cohort study was to assess the long-term response, complications and quality of life in patients undergoing segmental anterior rectal resection for endometriosis. The subjects consisted of patients who have undergone a segmental anterior rectal resection for endometriosis in the setting of a tertiary referral unit for the management of severe endometriosis. The data were obtained by means of a case note review and patient questionnaire. The main outcome measures were surgical complications and overall subjective improvement. Dysmenorrhoea, dyspareunia, dyschezia and chronic daily pain were measured using a visual analogue scale. Twenty-one anterior resections were performed by laparotomy and 24 by laparoscopy. There was no complication in 64% of the cases, and 83% of patients felt that their pain had resolved completely or was greatly improved. The Mean Self-Rated Health Status was significantly lower in the study group than in the general population. Deeply infiltrating endometriosis was confirmed in 92% of rectal specimens. Based on these results, we conclude that segmental anterior rectal resection is a relatively safe procedure for very severe rectovaginal endometriosis and also a very effective treatment.

Keywords Anterior resection · Endometriosis · Rectum

Introduction

Rectovaginal endometriosis involving the cul-de-sac accounts for 5–10% of all cases of endometriosis [1, 2]. It may infiltrate the rectum, vagina and cervix, resulting in severe pain, particularly dyschezia, and a diminished quality of life [3]. Although medical treatments have been shown to be moderately effective, even if only in the short term, in the treatment of superficial disease [4], they seem to be less effective in the treatment of deep disease, especially in the cul-de-sac, even when used in conjunction with surgery [5, 6]. Various differences in the histological appearance and the oestrogen receptors in rectovaginal endometriosis have been described which may explain this difference [7, 8]. Because of the perceived inadequacy of medical treatment, many authors have advocated the complete and radical resection of all endometriosis in rectovaginal disease even if this involves extensive surgery of the rectum [1, 2, 9, 10]. Some have adopted a more conservative approach [3, 8]. Since September 2000, the practice within our unit has been to offer patients the option of complete surgical excision of their endometriosis even if this means extensive rectal surgery to ensure complete extirpation of the disease in addition to medical management and pain control. Radical rectal surgery for deeply infiltrating rectal endometriosis is as yet uncommonly practised throughout the world and so it is important that complication rates and the success of treatment are closely monitored. The aim of this study was to assess the clinical response of our patients following anterior rectal resection for rectovaginal endometriosis, to evaluate their pain scores and to report on complications both per operative and longer term.

Patients and methods

Patients with a history of pelvic pain for 6 months or more were seen in the pelvic pain clinic. Patients had either been assessed locally or were tertiary referrals. Objective evidence

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of rectovaginal disease was available in all patients pre-operatively based on either laparoscopic findings or the palpation of a fixed nodule in the cul-de-sac. Patients were extensively counselled regarding advanced rectovaginal surgery and on its likely benefits, complications and alternatives. Separate statistics pertaining to anterior rectal resection for endometriosis were not available, and reliance was placed on data pertaining to anterior rectal resection largely performed for cancer. Those patients who chose to proceed were advised of the possibility of segmental anterior rectal resection if there was evidence of extensive deep rectal disease and were also aware of the potential for the requirement of a temporary stoma.

An oral bowel preparation in the form of Picolax (Ferring) was administered to all patients on the day before surgery. Unless there were medical complications, patients were admitted on the morning of surgery. After the patients had been placed in a low lithotomy position, ureteric catheters were inserted pre-operatively (Stamey 4F–8F) to help identify and protect the ureters as well as to facilitate the post-operative insertion of double J stents if required. Most of the initial anterior resections were performed by laparotomy, but with increasing experience, a laparoscopic approach is now almost exclusively employed.

Following the establishment of an 18-mm Hg pneumoperitoneum, a 10-mm port was inserted subumbilically. Two 5-mm ports were inserted suprapubically lateral to the inferior epigastric arteries, and a 12-mm port was inserted suprapubically to the right of the midline. Resection of pelvic peritoneum was commenced lateral to the ureters and continued down the pelvic side walls as far as the mesorectum and down into the rectovaginal septum using a harmonic scalpel (Ethicon or Olympus). Having dissected into the rectovaginal space, a decision was taken with regard to the necessary extent of rectal surgery; if the nodule was deep, single and more than 3 cm in diameter or there were multiple nodules, a decision to proceed to anterior segmental rectal resection was taken. If so, the rectum was then excised and re-anastomosed using a Premium CEEA 28-mm or 31-mm anastomotic device (Autosuture) as previously described [11]. Patients were electively defunctioned if the rectal anastomosis was less than 3 cm from the anorectal junction or if other bowel was resected in conjunction with the anterior resection.

Patients who had had a segmental anterior rectal resection were identified from our surgical database. The case notes were reviewed for post-operative complications and duration of stay, and the patients were contacted by post and asked to complete a questionnaire. The first part of the questionnaire assessed pain and the response to surgery. A visual analogue scale was used to assess dyspareunia, chronic daily pain, dysmenorrhoea and dyschezia. Patients were asked whether their pain had completely gone, was greatly improved, a

little better, no better or worse. The second part of the questionnaire assessed their quality of life using the EQ-5D self assessment tool [3, 12], and the results were compared with a representative sample in the United Kingdom [13]. Data comparing pain and quality of life scores were analysed using an independent two-tailed *t*-test.

Results

Forty-five segmental anterior rectal resections were performed between October 2000 and December, 2005. Of these, 24 were performed entirely laparoscopically (including 18 of the most recent 21). Sixteen (36%) patients had a hysterectomy at the same time. The ovaries were conserved in 38 (84%) cases. In 32 cases (71%) the anterior rectal resection was performed without the need for a defunctioning stoma. Of the remainder, two patients required a temporary defunctioning loop colostomy because of an ultra-low rectal anastomosis, one patient had had an ileostomy performed at an earlier date because of bowel obstruction and ten patients required a temporary ileostomy as they also underwent sigmoid, ileal or caecal resections of endometriosis. One patient also required a laparoscopic nephrectomy for a non-functioning kidney secondary to endometriosis-related chronic ureteric obstruction. In ten cases, double J ureteric stents were inserted post-operatively when there was thought to be a significant risk of ureteric devascularisation.

The histology of the rectal specimens confirmed endometriosis in 41 (92%) cases, with severe scarring, fibrosis and stricture in the remaining four specimens. In nine (20%) cases, endometriosis was found in the mucosa or submucosa, in 27 (60%) cases it was present in the muscularis layer and in five (11%) cases it was in the serosa only. One case demonstrated vascular invasion by endometriosis in the bladder wall, and in another case there was endometriotic involvement of the pararectal lymph nodes.

There was no complication in 29 (64%) cases. One patient who had had a partial colpectomy and partial cystectomy in addition to an anterior rectal resection developed a uretero-vaginal fistula despite the use of stents; this was closed following ureteroureterostomy. Two patients developed a post-operative anastomotic leak which required an emergency defunctioning stoma; one went on to develop a persistent rectovaginal fistula which has since been repaired. Despite routine thromboprophylaxis with low-dose low-molecular-weight heparin, one patient developed a deep venous thrombosis. There were six anastomotic strictures, all of which responded to a single balloon dilatation under sedation. All strictures followed the use of a CEEA 28-mm staple gun. All complications are listed in Table 1.

The first 41 patients to have under gone surgery were sent questionnaires after a mean follow-up of 8 months: 83%

Table 1 Complications that appeared in 16 cases

Gastrointestinal	
1	High-output stoma requiring readmission and rehydration
2	Anastomotic leak on day 5; ileostomy formed
3	Anastomotic leak; laparoscopic lavage and ileostomy day 8; later developed rectovaginal fistula
4	Rectovaginal fistula 2 months post-operatively despite elective ileostomy
5–10	Six rectal anastomotic strictures requiring balloon dilatation under sedation
Urinary	
11	Ureteric transection of duplex ureter
12	Ureterovaginal fistula requiring a ureteroureterostomy
Other	
13	Peroneal neuropraxia
14	Re-admission on day 11 with pain; laparoscopic washout only
15	Re-admission on day 12 with pelvic infection; settled with conservative management
16	Deep vein thrombosis

felt that their pain had either completely gone or was greatly improved (which we construed as the clinical cure rate) (Table 2). Concomitant hysterectomy appears to be associated with a complete loss of pain as opposed to 'great improvement' (Table 2). There was no significant difference in visual analogue pain scores between patients who had had their surgery more than 6 months earlier and those who had their surgery less than 6 months before.

Discussion

While not a randomised trial, our series shows a generally very good response to segmental anterior rectal resection and supports the small body of evidence which supports ultra-radical surgery for advanced endometriosis. In most cases it is difficult to compare results between different series as different parameters are measured, and most do not give specific results pertaining only to patients who have undergone a segmental rectal resection. Despite this, similar results in terms of pain relief have been achieved by Kechstein et al. [14] and Thomassin et al. [15] who reported improvement in pelvic pain, dysmenorrhoea, dyspareunia and dyschezia in women who had undergone segmental rectal resection. Redwine and Wright [16] similarly found

Table 2 Response in terms of pain since anterior resection

	Overall	Hysterectomy	Uterus conserved
Pain completely gone	15 (37%)	8 (50%)	7 (28%)
Pain greatly improved	19 (46%)	5 (31%)	14 (56%)
Pain a little better	3 (7%)	1 (6%)	2 (8%)
Pain no better	3 (7%)	1 (6%)	2 (8%)
Pain worse	1 (2%)	1 (6%)	2 (8%)

improvement in all of the symptoms relating to the cul-de-sac. However, if the results of the current study are compared with those of Ford, English et al. [17], who utilised exactly the same general technique, it appears that very much better results are obtained in women who undergo segmental anterior rectal resection as opposed to debulking surgery (clinical cure rate: 83 vs. 53%). This may be because of a more complete excision of the disease or because of denervation; however, the latter is less likely as the mesorectum was divided close to the rectal tube, and no patient complained of symptoms suggestive of wider neural damage. While debulking surgery will not remove disease within the bowel or treat stricture, disk resection may not remove microscopic or multifocal disease, as found by Kavallaris in 62% of rectal specimens [18]. The overall complication rate of 36% was felt to be commensurate with the extent of the surgery: of these complications just under half were major but only four were directly associated with anterior rectal resection per se. The overall clinical cure rate in women who underwent hysterectomy was no different to that in women who did not, although there was a trend toward more complete pain relief; this may be due to the removal of adenomyosis/treatment of dysmenorrhoea.

Although the surgery is major, it does not appear to protect against further intervention as our cumulative re-operation rate is currently 19%. After a 35-month follow-up, Varol et al. [19] identified a re-operation rate of 36% and a recurrence of endometriosis in 15% of the cases. All of our patients with recurrent disease had either ovarian endometriosis, adhesions or both. There was, however, no recurrence of endometriosis at the site of the original resection in any patient. The finding of endometriotic vascular invasion in the bladder [20] and of pararectal lymph node involvement may serve to explain the existence of endometriosis outside of the abdomen and pelvis.

Segmental anterior rectal resection appears to be effective as a treatment for very severe endometriosis involving the rectovaginal septum. It does, however, carry significant

risk of morbidity. While our results are encouraging, they must be considered to be preliminary: further randomised controlled trials are required to evaluate the effectiveness of this approach versus that of disk resection and versus simpler debulking of the disease.

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