

“Small is beautiful”

A series of ileo-anal anastomoses performed with the 25 - mm circular stapler



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“Small is beautiful” A series of ileo-anal anastomoses performed with the 25 - mm circular stapler

AIM: With the idea that a small diameter stapler should cause less sphincter trauma, we began to use the 25mm circular stapler to perform ileo-pouch-anal anastomosis (IPAA) and we report our experience.

MATERIAL OF STUDY: A retrospective study using a bowel function questionnaire and a quality of life questionnaire has been conducted on a group of patients who underwent IPAA using a 25mm stapler

RESULTS: We performed IPAA using a 25mm circular stapler in 37 patients. Postoperative mortality was nil and morbidity was 27%. One anastomotic stenosis occurred. Long term follow-up information was available on 28 patients. Mean follow-up was 70 months (range 8-177). Mean number of bowel movements was 4.5 (range 2-10, median 4.5) during the day and 0.9 (range 0-10, median 0) at night. Out of 28 patients, 19 (68%) were fully continent and 32% had occasional soiling, no one reported incontinence. All patients except one were able to withhold their stool for more than 15 minutes. Daytime pad use was: never 86%, occasionally 3%, frequently 11%; nighttime pad use was never 86%, occasionally 7% and frequently 7%. Bowel regulating drugs use was never 82%, occasionally 14%, regularly 4%. Evacuation difficulties were: never 75%, occasionally 21%, frequently 4%.

DISCUSSION: Our results compare favourably with the literature, which reports median bowel frequency 6-7.6/24h, 9.4-33% urgency, 17-44% daytime soiling and 32-61% nighttime soiling.

CONCLUSIONS: Our results must be considered preliminary but we found the 25-mm stapler safe and adequate to perform IPAA.

KEY WORDS: IPAA, Ulcerative Colitis, Stapler, Function

Introduction

Conservative proctocolectomy with ileo-pouch-anal anastomosis (IPAA) is the preferred procedure for patients with ulcerative colitis (UC) who need surgery. The ileo-

anal anastomosis can be hand-sewn, with mucosectomy, or stapled. Stapled IPAA may have some advantages, as far as function is concerned and it may be an easier procedure to perform.

Circular staplers of different sizes are available and which one is the most suitable has never been demonstrated. IPAA patients evacuate liquid or semi formed stool, not formed feces and the appropriate diameter of an ileo-anal anastomosis is not necessarily the same as that of a colo-rectal or colo-anal anastomosis. With the hypothesis that a small diameter stapler should cause less sphincter trauma and a not too large anastomosis could improve continence, we began to use the 25mm circular stapler to perform IPAA and we report here our experience.

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Materials and Methods

All patients undergoing surgery for Inflammatory Bowel Disease (IBD) at 4th Department of Surgery, San Giovanni Battista - Molinette Hospital, Città della Salute e della Scienza, Turin, are entered in prospectively maintained IBD surgical database. A retrospective analysis of collected medical records and phone questionnaires has been conducted on a group of 37 patients consecutively submitted to IPAA using a 25mm stapler from June 1999 to October 2013. Patients who underwent IPAA for familial adenomatous polyposis or whose final postoperative pathological diagnosis was Crohn's disease were excluded, as well as hand-sewn or stapled with a larger stapler IPAA. From the database were noted for each patient: age at surgery, gender, ASA score, postoperative morbidity, mortality and follow-up length.

All patients had a 18-cm long ileal J pouch constructed and anastomosed to the anal canal with a 25mm circular stapler. A defunctioning ileostomy, which was closed three months later after hydrosoluble contrast-medium ileography and defecography, was fashioned in all cases. From hospital discharge to ileostomy closure, patients were seen in the outpatients clinic at one-month intervals: anal examination was performed in all patients, with gentle digital dilatation of the anastomosis (not under anesthesia) in case of necessity.

After ileostomy closure our patients were followed up prospectively in an outpatient clinic by a multidisciplinary team consisting of an IBD-oriented gastroenterologist and a colorectal surgeon. Follow up time was calculated from ileostomy closure.

Ileo-anal anastomotic stricture was defined as a narrowing at the anastomosis that required dilatation under anesthesia.

All patients with a functioning IPAA who could be reached were contacted by phone and were asked to respond to a bowel function questionnaire and a quality of life questionnaire.

The bowel function questionnaire consisted of 9 questions: A) As an average, how many bowel movements have you during the day?

B) As an average, how many bowel movements have you at night?

C) How often have you episodes of fecal leakage?

D) How often do you wear a pad during the day?

E) How often do you wear a pad at night?

F) How often do you have to take antidiarrheal drugs?

G) How often do you experience difficulties to evacuate?

H) Can you postpone defecation for 15 minutes?

I) Does your bowel function stop you from doing anything? For questions 1 and 2, the respondents were asked to give an average of the number of daytime and of nighttime bowel movements during the last month.

Questions from 3 to 7 could be answered by choosing from three response options: never, occasionally = less than once a week, frequently = once a week or more.

Questions 8 and 9 could be answered yes or no.

Quality of life was evaluated using the Cleveland Global Quality of Life (CGQL) instrument ¹.

Patients were asked to rate three items (current quality of life, current quality of health, current energy level), each on a scale from 0 to 10, 0 being the worst and 10 the best. The sum of the three scores divided by 30 gave the CGQL score (possible range 0-1).

Results

From April 1999 to October 2013, 37 patients underwent IPAA using a 25mm stapler. Patient characteristics are shown in Table I. No postoperative mortality occurred.

There were 10 immediate (i.e. 30 days) postoperative complications (morbidity 27%): we had 5 (13%) septic perianastomotic complications, which resolved with conservative treatment in 3 cases and with surgery in one case; in the fifth case pouch excision was required; we also had 5 cases of bleeding from the pouch, which resolved with conservative treatment and transfusion.

In 2 cases an asymptomatic anastomotic fistula was detected at scheduled ileography: in both cases fistulas eventually resolved and the ileostomy was closed.

We had only one case of anastomotic stenosis, diagnosed before ileostomy closure in a patient who did not attend follow-up appointments. The stenosis resolved with a single dilatation under anesthesia and never recurred after ileostomy closure.

In the long term three more pouches have been excised, two because of refractory pouchitis and one because of high grade dysplasia in the cuff. One patient died of cholangiocarcinoma. Three patients were lost to follow-up and one was excluded because her ileostomy had been closed since less than one month.

Long term follow-up information was available for 28 patients. Mean follow-up was 70 months (range 8-177). Mean number of bowel movements was 4.5 (range 2-10) during the day and 0.9 (range 0-10) at night.

TABLE I - Patients characteristics.

Patients	37
Gender	
Men	15
Women	22
Medium age (years)	44 (20-72)
Medium ASA score	2 (1 - 3)
ASA 1	1
2	23
3	13
4	0

Median number of bowel movements was 4.5 during the day and 0 at night.

Out of 28 patients, 19 (68%) were fully continent without any degree of soiling, and 32% had occasional soiling, no one reported incontinence.

All patients except one (96%) were able to withhold their stool for more than 15 minutes.

During the day 86% of patients never had to wear an incontinence pad, 3% wore it occasionally and 11% frequently.

At night 86% of patients never had to wear an incontinence pad, 7% wore it occasionally and 7% frequently.

Only one patient (4%) had to take bowel regulating drugs on a regular basis, 14% took them occasionally, while 82% of patients never took bowel regulating drugs. Only one patient (4%) had frequent evacuation difficulties, 21% occasionally had evacuation difficulties, 75% never had evacuation difficulties.

Quality of life of our patients was quite good: mean CQLS was 0.76 (range 0.47 – 1), median CQLS was 0.77. Results are summarised in Table II.

TABLE II - Functional outcome

A) As an average, how many bowel movements have you during the day?	
4.5 (2-10)	
B) As an average, how many bowel movements have you at night?	
0.9 (0-10)	
C) How often have you episodes of fecal leakage?	
never	19 (68%)
occasionally	9 (32%)
frequently	0
D) How often do you wear a pad during the day?	
never	24 (86%)
occasionally	1 (3%)
frequently	3 (11%)
E) How often do you wear a pad at night?	
never	24 (86%)
occasionally	2 (7%)
frequently	2 (7%)
F) How often do you have to take antidiarrheal drugs?	
never	23 (82%)
occasionally	4 (14%)
frequently	1 (4%)
G) How often do you experience difficulties to evacuate	
never	21 (75%)
occasionally	6 (21%)
frequently	1 (4%)
H) Can you postpone defecation for 15 minutes?	
yes	27 (96%)
no	1 (4%)
I) Does your bowel function stop you from doing anything?	
yes	1 (4%)
no	27 (96%)
Quality of life: mean CQLS	
0.76 (0.47-1)	

Numbers in brackets are range (questions A and B and Quality of life) or percentages

Discussion and Comments

Conservative proctocolectomy with ileo-pouch-anal anastomosis is now the preferred procedure in ulcerative colitis surgery: postoperative functional outcomes are good but not perfect.

Stapled anastomosis without mucosectomy can offer better function and, compared to hand-sewn anastomosis with mucosectomy^{2,3}, it can be an easier procedure.

Many stapler guns exist with diameters ranging from 25mm to 33mm and which one is the most suitable has never been demonstrated. Because anastomotic stenosis can be a problem one could argue that "bigger is better" and larger staplers should produce larger anastomoses, thus preventing stenoses; however this has never been demonstrated.

We have been able to find only three papers comparing different stapler sizes in IPAA.

Kirat et al.⁴ compared 28-29 mm staplers with 31-33 mm staplers and found no significant association with the size of the stapler and the outcome: leak rates were 6.2% for larger staplers and 4.5% for smaller ones, stricture rates were 2.7% for larger staplers and 1.9% for smaller ones.

Lewis et al.⁵ had 38% anastomotic stricture rate in their series and stapler size did matter, with a 57% stricture rate in the 25 mm stapler group as compared to 34% in the 28 mm stapler group. They also found that temporary defunctioning ileostomy, the use of a W pouch and anastomotic dehiscence influenced the development of anastomotic stricture. However the eventual functional outcome after dilatation of a stricture was as good as the outcome in the patients who did not develop stricture.

Senapati et al.⁶ similarly found a 39.6% rate of anastomotic stricture after stapler use, but there was no difference in the incidence of stricture according to the size (25 mm or 28 mm or 31 mm) of the stapler. In our series we observed only one anastomotic stricture, (2.7%) which resolved after a single dilation under anesthesia.

As a rule our patients were seen in the outpatients clinic at one-month intervals and a digital anal examination was performed, with gentle digital dilatation of the anastomosis, without anesthesia, if needed. This may explain why our stricture incidence is so low: the sole patient who had stricture did not attend follow-up appointments. In accord with our results, Yagyu et al.⁷ demonstrated that regular finger dilation is useful for preventing anastomotic stenosis and achieving favorable defecatory function after low anterior resection of the rectum. As a matter of fact the intuitive concept of smaller stapler guns producing anastomotic stenosis is far from substantiated⁸.

Even if small diameter staplers produce small diameter anastomoses, IPAA patients evacuate liquid or semi formed stools, not formed feces and the appropriate diameter of an ileo-anal anastomosis is not necessarily

the same as that of a colo-rectal or colo-anal anastomosis.

On the other side transanal introduction of the stapler causes sphincter injury, as it was demonstrated by Ho et al.⁹ after sigmoid colectomy: a smaller stapler in theory should cause less sphincter injury and functional damage.

As a matter of fact functional outcomes and postoperative morbidity are the main concerns of the IPAA procedure. Berndtsson¹⁰ reported a median bowel frequency of 6 per 24 hours, with 76% with at least one night evacuation; 23% suffered from urgency and were not able to defer evacuation; 12% had evacuation difficulties; 17% had soiling/leakage during day and 52% of males and 32% of females had soiling/leakage during night; 64% of males and 51% of females used bowel regulating drugs. They had 11% failures. Tulchinsky¹¹ reported a median bowel frequency of 6-7, with 1-2 evacuations at night. Complete continence during the day was reported by 66-78% of the patients during the day and 67-60% at night. Michelassi¹² also reported 6 evacuations per 24 hours and 53-76% of patients were fully continent; pad use was 8.7% during the day and 11.8% at night. Continence was better after stapled than after hand-sewn IPAA. They had 6.4% incidence of anastomotic dehiscence and 10.7% anastomotic stenosis requiring dilatation.

The Maastricht group¹³ reported on 26 young patients who underwent IPAA: five (19%) underwent pouch excision. The median defecation frequency was 5 to 7 times during daytime and 1-2 times during nighttime, and 33% of patients were not always able to withhold their stool for more than 15 minutes; some degree of soiling occurred in 44% during daytime and 61% during nighttime and 39% had to wear a pad 7 days per week. For McCormick et al.¹⁴ J pouch patients had a 24-hours bowel frequency of 7 at 12 months and of 6.5 at long-term follow-up, 18.6% of patients used pads and 30.2% had incontinence at 1 year and 21.9% at 10 years. In a recent study¹⁵ 71% of patients had 6 or more evacuations per 24 hours and 58% evacuated at night, 82% were fully continent during daytime and 62% during nighttime; 27% wore a pad during daytime and 31% during nighttime; 90% could retain their stools for more than 15 minutes; only 6% had pouch evacuation problems. Pouch failure rate was 5.6%. Pouch function was stable over time.

Our patients had 4.5 bowel movements during the day and 0.9 at night, 68% were fully continent without any degree of soiling, 32% had occasional soiling, no one reported incontinence; all except one, (96%) were able to withhold their stool for more than 15 minutes and 82% never took bowel regulating drugs. Only one patient (4%) had frequent evacuation difficulties, 75% never had evacuation difficulties.

Our experience is very limited and we are unable to present a matched cohort of patients treated with a larger

stapler for comparison: however we found that a 25 mm stapler can be used to perform IPAA with good functional results and a low incidence of stricture, provided that digital anal examination is regularly performed until stoma closure. We believe that a reduced sphincter trauma during small diameter stapler introduction helped our patients in obtaining good postoperative function.

Additional advantages of the small diameter stapler are less trauma for the pouch end where the anvil is inserted and a theoretical lower risk of entrapment of the vagina during stapler closure.

Moreover if the double stapling technique is used, the introduction of the circular stapler in a very short anal stump, which is usually performed by a junior member of the team, can easily cause disruption of the linear staple line: by using a small diameter stapler this risk should be lower.

Conclusion

In conclusion our experience is very limited and our results must be considered preliminary but we found that a 25-mm stapler can be safely used to perform IPAA.

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Riassunto

SCOPO E RAZIONALE: Il diametro più appropriato per la suturatrice circolare usata per confezionare l'anastomosi ileo-pouch-ale, durante la proctocolectomia conservativa per colite ulcerosa, non è mai stato stabilito con sicurezza. Poiché uno dei problemi della proctocolectomia conservativa è l'incontinenza, l'uso di una suturatrice da 25mm, quindi di piccolo diametro, ha un forte razionale, perché essa traumatizza meno lo sfintere anale; inoltre i pazienti evacuano materiale fecale liquido o semiformato e non feci solide, pertanto un minore diametro dell'anastomosi potrebbe essere vantaggioso. Abbiamo quindi deciso di valutare i risultati clinici e funzionali di una serie di pazienti affetti da Colite Ulcerosa e sottoposti a proctocolectomia conservativa utilizzando una suturatrice circolare da 25mm

PAZIENTI E METODI: Si tratta di uno studio retrospettivo osservazionale. Da giugno 1999 a ottobre 2013 globalmente 37 pazienti affetti da Colite Ulcerosa sono stati sottoposti a proctocolectomia conservativa con pouch a J, utilizzando una suturatrice circolare da 25mm per l'anastomosi ileo-ale. Una ileostomia di protezione è stata confezionata in tutti i casi e chiusa, previa ileo-pouch-grafia e defecografia con mezzo di contrasto

idrosolubile, dopo almeno 3 mesi. I pazienti sono stati regolarmente seguiti in ambulatorio ed una esplorazione digitale dell'anastomosi è stata eseguita almeno una volta al mese.

Le caratteristiche dei pazienti e i dati di morbidità sono stati ricavati da un database chirurgico gestito prospettivamente. A tutti i pazienti, con pouch funzionante e raggiungibili telefonicamente è stato somministrato un questionario di 9 domande: numero medio di evacuazioni diurne, numero medio di evacuazioni notturne, frequenza di episodi di incontinenza, uso di un pannolino di giorno, uso di un pannolino di notte, uso di farmaci anti-diarroici, eventuali difficoltà ad evacuare, capacità di posporre la defecazione di 15 minuti ed infine se la funzione intestinale interferiva con le attività quotidiane. È stato poi anche somministrato il questionario sulla qualità di vita Cleveland Global Quality of Life (CGQL): a tre domande su qualità della vita, qualità della salute e livello di energia il paziente doveva dare un voto da 0 a 10 (essendo 10 il meglio) e la somma dei voti divisa 30 dava il punteggio CGQL, compreso tra 0 e 1.

RISULTATI: In totale 37 pazienti sono stati sottoposti a proctocolectomia conservativa utilizzando una suturatrice circolare da 25mm. Non vi è stata mortalità operatoria. Si sono verificate 10 complicanze postoperatorie a 30 giorni (morbidità 27%): 5 complicanze settiche perianastomotiche, 3 risolte in modo conservativo, una con il reintervento mentre nel quinto caso è stata necessaria l'excisione della pouch, e 5 episodi di emorragia dalla pouch, risolti con terapia conservativa e trasfusioni. Alla ileografia-defecografia di controllo sono state diagnosticate due fistole anastomotiche asintomatiche, che si sono definitivamente risolte con terapia conservativa, permettendo la chiusura dell'ileostomia. Abbiamo avuto un solo caso di stenosi anastomotica, in un paziente che non si era presentato agli appuntamenti ambulatoriali, che si è definitivamente risolto con una sola dilatazione in anestesia spinale.

Nel lungo termine tre altre pouch sono state rimosse, due per pouchite refrattaria e una per displasia di alto grado, una paziente è deceduta per colangiocarcinoma, tre pazienti sono stati persi al follow-up e una è stata esclusa perché la stomia era stata chiusa da meno di un mese.

Pertanto informazioni dai questionari sulla funzione anale e sulla qualità di vita hanno potuto essere raccolte su 28 pazienti. Il follow-up mediano è stato di 70 mesi (8-117). Il numero medio di evacuazioni era 4,5 (range 2-10, mediana 4,5) di giorno e 0,9 (0-10, mediana 0) di notte. Sui 18 pazienti, 19 (68%) erano completamente continenti e 9 (32%) avevano perdite fecali occasionali, nessun paziente era incontinente. Tutti i pazienti tranne uno erano in grado di ritardare la defecazione di almeno 15 minuti. Per l'uso di pannolino di giorno le risposte sono state: mai 86%, occasionalmente 3%, frequentemente 11%; per l'uso di pannolino di notte: mai 86%, occasionalmente 7%, frequentemente 7%. Farmaci anti-

diarroici non erano mai usati dall'82%, occasionalmente dal 14% e regolarmente dal 4%. Difficoltà nell'evacuazione non era mai sperimentata dal 75% dei pazienti, occasionalmente dal 21% e frequentemente dal 4%. Il punteggio di qualità di vita CQLS è risultato 0,76 (0,47 – 1, mediana 0,77).

COMMENTI E CONCLUSIONE. È probabile che la funzione anale della proctocolectomia conservativa per Colite Ulcerosa sia migliore se l'anastomosi ileo-anale è eseguita con la suturatrice meccanica circolare, ma quale diametro di suturatrice convenga usare, tra i vari disponibili (25mm, 28mm, 29mm, 31mm, 33mm) non è chiaro e anche in letteratura vi sono solo tre studi comparativi, su pochi pazienti e con risultati contraddittori.

L'uso della suturatrice da 25mm è supportato da un forte razionale. Innanzitutto in un intervento dove uno dei rischi principali è l'incontinenza, minore è il diametro della suturatrice, minore è il trauma sullo sfintere durante la sua introduzione transanale ed è molto discutibile che il diametro di una anastomosi colo-anale, attraversata da feci solide, debba essere uguale a quello di un'anastomosi ileo-anale, attraversata da materiale liquido o al massimo semi-formato. Vantaggi aggiuntivi di una suturatrice di minor diametro, almeno in linea teorica, sono un minor trauma sull'estremità della pouch e soprattutto un minor rischio di intrappolare la parete vaginale durante la chiusura dello strumento. Inoltre se l'anastomosi è veramente sul canale anale, come sempre dovrebbe essere, usando la tecnica del "double-stapling", è molto facile che la suturatrice circolare introdotta dall'ano, spesso da un giovane membro dell'équipe operatoria, sfondi la sutura lineare che chiude l'apice del canale anale: con una suturatrice piccola, il rischio è minore.

Il maggior rischio teorico di stenosi, suggerito da alcuni ma negato da altri, nel nostro caso si è rivelato basso, purché i pazienti siano visitati regolarmente nel postoperatorio.

La nostra casistica è ridotta e non siamo in grado di presentare una serie comparativa di pazienti operati con una suturatrice di diverso diametro, ma i risultati funzionali, confrontati con la letteratura, sono buoni e siamo convinti che l'uso di una suturatrice meno traumatizzante abbia contribuito a conservare una buona funzione sfinterica.

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