

The role of laparoscopy in adult bowel obstruction caused by intussusception



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AIM: The intestinal intussusception in the adult represent 1% of all occlusions. Organic causes are detectable in 90% of cases. Aim of this study is to discuss the diagnostic and therapeutic iter of adult intestinal intussusception with particular emphasis on role of laparoscopy.

MATERIALS AND METHODS: We retrospectively considered 10 cases of intussusception between January 2000 and January 2013, demographic and clinical issue, location of invagination, the type of surgical treatment, the post-operative morbidity and mortality and histological nature of occlusion cause.

RESULTS: Ten (F: M 1.5:1) patients were admitted in emergency with bowel obstruction, the median age was 50 years (r.18-91). All required surgical treatment. Three patients (30%) underwent a totally laparoscopic procedure, four patients (40%) laparoscopic exploration followed by laparotomy, three patients (30%) open surgery directly. The invagination was ileo-ileal (50%), ileo-colonic (40%) and colo-colonic (10%). Nine out of ten underwent to surgical resection. The malignancy was the most frequent cause.

DISCUSSION: In case of colonic intussusception should not be performed any reduction because the frequent association with neoplastic disease. The laparoscopy can be safe and effective to allow, in entero-enteric and entero-colic intussusception, the definitive treatment of the occlusion. In the case of colo-colonic intussusception laparoscopy is a valuable diagnostic aid and can facilitate the later processing.

CONCLUSION: The intestinal invaginations diagnosis can often be difficult. Laparoscopy is safe and effective in the diagnosis and treatment of adult intussusception.

Introduction

Bowel intussusception in adult represents almost 5% of all intussusceptions and it causes approximately 1% of

all intestinal obstructions. It has been shown that an organic cause, such as lipomas, malignant neoplasm, Meckel diverticulum, adenomatous polyps occurs in 90% of cases^{1,2,13}. This kind of pathology, in which a surgical treatment is mostly required, might benefit of a laparoscopic approach via open technique sec. Hassen^{3,4,14}.

Aim of this study was to discuss the diagnostic and therapeutic approach of intestinal intussusception in the adult and the role played by laparoscopic technique in the surgical management. Actually few reported data have been published in literature and most are case reports^{5,3,6,7}.

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Materials and Methods

We have retrospectively considered 10 cases of adult (18 or more years old) patients with bowel intussusception admitted at General and Emergency Surgery unit of University Hospital of Pisa in the period between January 2000 and January 2013. Baseline demographic characteristics of patient population, clinical clues and localization of disease, type of surgical treatment used (laparoscopic or laparotomic approach), post-operative course were evaluated. Morbidity and mortality referred in the immediate post-operative course were also considered. Finally the organic causes associated to bowel intussusception were classified according to their anatomic-pathological findings.

Results

All referred patients underwent surgical treatment. Among all patients half of them needed of an urgent surgical treatment. Female/Male ratio was 1.5:1. Mean age was 41 years (range age 18-50 years) and 63 years

TABLE I - Symptoms and signs in adult bowel intussusception

Abdominal pain	90%
Intestinal obstruction	60%
Hematochezia	30%
Diarrhea	20%
Weight loss	10%

TABLE II - General characteristics of the patients

Number of patients	10
Age (years)	50
F:M	1,5:1
Location	Ileo-ileal (50%) Ileo-colic (40%) Colon-Colonic (10%)
Laparoscopic approach	7 (70%)
Procedure applied	Ileum resection (50%) Right hemicolectomy (20%) Left hemicolectomy (10%) Subtotal colectomy (10%) Reduction (10%)
Average operative time (minutes)	161
Average postoperative hospital stay (days)	6
Morbidity	2 (20%)
Mortality	0

TABLE III - Histological causes of intestinal invagination

Hamartomatous ileum polyp	3 (33,5%)
Colic adenocarcinoma	3 (33,5%)
Intestinal metastasis from melanoma	1 (11%)
Ileum inflammatory pseudotumor	1 (11%)
B-cell non-Hodgkin lymphoma	1 (11%)

(range age 42-91 years) for female and male group respectively. Predominant symptoms were abdominal pain (90%), sickness, vomiting, constipation lack of gas, diarrhea and hematochezia, that are those usually considered in occlusion diagnosis (Table I). Localization of bowel intussusception involved the ileo-ileal tract (50%), ileo-colic tract (40%), colon-colonic tract (10%). Seven cases (70%) benefited by laparoscopic open access technique (one of them completely performed by laparoscopic approach), meanwhile the other three cases were treated by laparotomic access. Total averaged operative time was 161 minutes (range time 50-260 minutes); by comparison between the two groups (laparoscopic versus laparotomic approach) the mean of operating room time was 161 minutes (range 50-245) and 160 minutes (range 100-260) respectively. We performed resection of distal small bowel in 5 (50%) cases, laparoscopic-assisted left emicolectomy in two (20%), laparoscopic-assisted subtotal colectomy in one (10%) and completely laparoscopic-assisted reducing intussusception without intestinal resection in the last one patient (10%) (Table II). Patients were discharged after mean 6 days (range 4-10). In the laparoscopic approach group the mean period of postoperative course was 5,8 days (range 4-9), while in the laparotomic group was 7,3 days (range 6-10). There was not post-operative mortality. The rate of postoperative complications was 20%: two patients had delayed gastric empty and fever due of pneumonitis treated only by medical therapy. The final pathologies showed that the occlusions were due to hamartomatous polyp (33,5%), colic adenocarcinoma (33,5%), metastasis from melanoma (11%), small bowel inflammatory pseudotumor (11%) and non Hodgkin B cells lymphoma (11%) (Table III); one patient did not undergo visceral resection.

Discussion and Comments

In the literature is described how the laparoscopic approach during abdominal emergencies is feasible and safe both diagnostic and therapeutic^{8,4,14}. It is known that the laparoscopic surgery offers many advantages compared to the traditional one such as shorter hospital staying, a faster restoring of intestinal motility

ty, lower post-operative pain ¹⁴ and some authors describe the possibility of a less number of adhesion ⁹.

Hou YC et al. ⁶ and Marsden N. et al. ⁵ proposed the laparoscopic approach during ileo-colic intussusceptions reporting many case reports as example.

It is important to underline that the pneumoperitoneum during this series was induced by Hasson open technique. The laparoscopic approach could be very useful to discover the exactly cause of the occlusion, the location mostly when it involved the small bowel and finally in the mobilization and preparation of the intestinal stumps in the ileo-colic intussusceptions. If there are not organic causes or ischemical bowel sufference, laparoscopic intervention can resolve the intussusception without resections.

Cakir M. et al. ² shows as the pre-operative diagnose of adult intestinal intussusceptions is still quite difficult. The pre-operative diagnostic management includes US, CT, MR, endoscopy and X-Ray with contrast offers the 80% of accuracy ¹³. The laparoscopic approach lead to land a correct diagnose and in the 10% of the cases it is able to solve the occlusion without intestinal resection especially during simple small bowel intussusceptions without an organic cause ^{10,11,12,14}.

The visceral resection should be landed after the evaluation of bowel vitality or the presence of tumefaction. In our study the main causes of conversion were: the intestinal distension avoiding laparoscopic movements, the impossibility of discovering the cause of the occlusion and the necessity of a visceral resection.

Cakir M. et al. ² and Verre et al. ¹³ suggests the immediately resection in case of ileo-colic or colon-colonic invagination, because of the high risk of neoplastic origin. In our experience we performed two right emicolectomy one left emicolectomy and one subtotal colectomy; their final pathology was three adenocarcinoma and one non Hodgkin B-cells Linfoma.

During emergency treatment, as reported by Kim BS et al ⁷, intra-operative colonoscopy could be useful above all in ileo-colic or colon-colonic invagination. In our series intra-operative colonoscopy allowed to discover, in the same patient, one cecum adenocarcinoma and colic polyposis, so we performed subtotal colectomy.

Conclusion

Intestinal invaginations are a rare cause of adult intestinal occlusion, mostly with an organic reason and they need a surgical treatment generally in urgency. The laparoscopic approach, with the pneumoperitoneum induced by Hasson technique, is safe and feasible and could be able to release the intestinal loops and to evaluate if a resection is needed. The intra-operative colonoscopy, in ileo-colic or colon-colonic invagination, could be useful to exclude multiple colonic lesions.

Riassunto

INTRODUZIONE: Le invaginazioni intestinali nell'adulto rappresentano l'1% di tutte le occlusioni. Cause organiche (tumori benigni o maligni) sono individuabili nel 90% dei casi (1, 2,13). Lo scopo di questo studio è discutere l'iter diagnostico e terapeutico nell'ambito delle invaginazioni intestinali dell'adulto con particolare rilievo al ruolo della laparoscopia (3,4,5,6,14).

METODI: Abbiamo considerato in maniera retrospettiva 10 casi di invaginazione intestinale ricoverati tra Gennaio 2000 e Gennaio 2013, presso l'U.O. Chirurgia Generale e D'Urgenza dell'Azienda Ospedaliera Universitaria Pisana, le caratteristiche demografiche, la clinica, la sede dell'invaginazione, il tipo di trattamento chirurgico, il decorso post-operatorio, la morbilità e mortalità e la natura istologica delle lesioni alla base dell'occlusione.

RISULTATI: Tutti i 10 pazienti adulti con invaginazione intestinale hanno richiesto un trattamento chirurgico. Il rapporto F:M è risultato di 1,5:1. L'età media era di 50 anni (18-91). La clinica è stata quella di occlusione intestinale (dolore addominale, nausea, vomito, alvo chiuso a feci e gas, diarrea ed ematochezia). Sette pazienti (70%) hanno subito un intervento chirurgico con approccio laparoscopico; tre pazienti (30%) sono stati sottoposti a intervento open. La sede dell'invaginazione è stata nel 50% il tratto ileo-ileale, nel 40% quello ileo-colico e nel 10% quello colo-colico. Cinque pazienti (50%) hanno subito una resezione di tenue; due (20%) una emicolectomia destra laparo-assistita; uno (10%) un'emicolectomia sinistra, un'altro (10%) una colectomia sub-totale laparo-assistita, un paziente (10%) è stato sottoposto a sbrigliamento di invaginazione ileo-colica eseguito in laparoscopia.

La natura istologica è stata in tre casi un polipo amartomatoso del tenue, in tre casi un adenocarcinoma colico, nei restanti casi di metastasi intestinale da melanoma, di pseudotumor infiammatorio del tenue e di Linfoma non Hodgkin di tipo B. In un caso non è stata effettuata resezione.

CONCLUSIONE: Le invaginazioni intestinali rappresentano una rara causa di occlusione intestinale nell'adulto, sono principalmente di natura organica e richiedono spesso un trattamento chirurgico. Questa diagnosi è spesso difficoltosa (1,2,13): in almeno il 10-15% dei casi l'approccio laparoscopico permette di risolvere il quadro occlusivo, specie nelle invaginazioni entero-enteriche. Sono inoltre noti a tutti i benefici per il paziente legati alla laparoscopia rispetto alla chirurgia open (7,14). Nel caso delle invaginazioni ileo-coliche o colo-coliche (2), non bisognerebbe nemmeno prendere in considerazione la necessità di eseguire delle riduzioni, dal momento che è molto alto il rischio di patologia neoplastica alla base della invaginazione.

L'approccio laparoscopico con tecnica open può essere sicuro ed efficace per permettere, nel caso delle inva-

ginazioni entero-enteriche, la riduzione e lo sbrigliamento delle anse intestinali coinvolte e stabilire la necessità o meno di procedere a una resezione. Nel caso delle invaginazioni ileo-coliche o colo-coliche la laparoscopia con la colonscopia intraoperatoria permette di agevolare il trattamento open successivo.

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