Results of laparoscopic surgery in management of small bowel obstruction for patients previously operated on for intra-abdominal malignancy at K Hospital

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Abstract

Introduction: Laparoscopic surgery of postoperative small bowel obstruction had been put into practice. There were some studies on the results in this issue for post appendectomy and gynecology or post cholecystectomy but the results in surgery post upper and/or lower median incision and post cancer digestive or post malignant intra- abdominal operations have not been much studied. In National Cancer Hospital as known as K hospital, laparoscopic surgery of post operative small bowel obstruction due to strangulation , volvulus or simple adhesion (short adhesion) have not been put into operation up to now. We therefore conducted our retrospective study aimed at evaluating the results of post operative small bowel obstruction surgery in patients previously operated on for intra-abdominal malignancy or gynecology

Patient and method: Retrospective study. It was conducted between 2019-2023

Result: There were 22 patients, male 16 patients (72,7%), female 6 patients (27,3 %), mean age 59,2 (range 32-70). All underwent one abdominal surgery (upper and/or lower median incision). 72,7 % had emergency surgery of post operative small bowel obstruction (POSBO) $\leq$ 24 h the onset symptoms;27,3 % > 24 h the initial symptoms. 95% of them had fluid air level on plain abdominal X-ray. CT scan revealed 3 transition points. Per-operative lesions: 45,45 % had band adhesive obstruction (strangulation); 22,,27 % had volvulus due to simple and short adhesion, 13,6% (3 patients) had intestinal necrosis due to adhesive volvulus (2 patients), other had internal hernia; 3 remained patients had phytobezoar obstruction post gastrectomy. Laparostomy performed in 86,3 %, laparoscopic surgery in 13,7 %. No death per and after operation was occurred .One had developed the digestive cutaneous fistulas due to bowel resection was resolved by medical treatment.

Conclusion: Laparoscopic surgery could be performed for patients undergoing previous surgery for intra-abdominal malignancy or gynecology pathologies. The success rate of laparoscopic or laparoscopic assisted surgery could be obtained for strangulations or volvulus, and simple adhesion (short adhesion) as well as phytobezoar obstructions.

Key word: Post operative small bowel obstruction, laparoscopy, adhesiolysis

Introduction

Laparoscopic surgery of postoperative small bowel obstruction (PSBO) had been put into practice. There were some studies on the results in laparoscopic surgery for PSBO or for small bowel obstruction (SBO) after appendectomy and gynecology or cholecystectomy but the results in laparoscopy for patients undergoing previous surgery for intra-abdominal malignancy or gynecology pathologies have not been much studied [1], [2], [3]

In K hospital, laparoscopic surgery for post operative small bowel obstruction due to strangulation or volvulus or simple adhesion (short adhesion) have not been put into operation up to now. We therefore conducted our retrospective study aimed at evaluating the results of post operative small bowel obstruction surgery in post malignant intra-abdominal surgery patients and also the feasibility of laparoscopic operation in such patients.

Patients and method

Retrospective study.

Time: January 2019 to January 2023.

Selection criteria: Patients with small bowel obstruction after surgery for intra-abdominal malignancy due to strangulation or volvulus.

Exclusion criteria : Small bowel obstruction due to intra-abdominal recurrent cancer.

Study site: Abdominal Surgery II Department of K hospital

Results

There were 22 patients with PSBO including 6 female (27,3%); male 16 patients (72,7 %); average age 59,5 years (range 32-70)

Surgical history: All undergone one operation with upper median incision or lower or upper and lower median incision but one had transversal incision (gynecology operation). Of them: 7 patients had subtotal gastrectomy for gastriccancer;1 patient had total gastrectomy for gastric cancer 13 patients had colorectal cancer, 1 patient had total hysterectomy for cancer

Table 1: Clinic manifestation

	Clinical manifestation	n	%
	Functional symptoms		
1	Abdominal pain ≤ 24 h	16	72,7
2	Abdominal pain > 24 h	6	27,3
3	Vomiting	20	90,9
4	No vomiting	2	9,1
5	No flatus	20	90,9
6	Flatus +	2	9,1
	Physical symptoms		
7	Localized abdominal pain	14	63,6
8	Bowel loop distension	20	90,9
9	Intestinal movement	15	68,2
10	Abdominal sensibility	2	9,0

-2 patients had shock: Pulse >120-140 beats per min (bpm). Blood pressure < 90 mmhg.

Table 2: Para-clinic examination

	Para-clinic examination	n	%
1	Red blood cell count (down)	3	13,6
2	white blood cell count (up) (> 10.000 G/L)	7	31,8
3	High serum urea	5	25
4	High serum creatinine	6	30
5	Abdominal plain X-ray		
	Fluid air level	21	95,45
	Intestinal dilatation	21	95,45
6	CT scan		
	Intra-abdominal fluid	10	45,45
	Intestinal dilatation	21	95,45
	Transition point	3	13,6
	Intestinal ischemia	1	4,5

Preoperative diagnosis: PSBO 40,9%, Strangulation 40,9%, Volvulus 9,09% , intestinal necrosis 4,5%, Phytobezoar 4,5%.

Postoperative diagnosis: Volvulus (Intestinal necrosis) 13,6% (3 patients); Volvulus (Adhesions to incision wound) 27,27% (6 patients); SBO for band 45,45% (10 patients); Phytobezoar (post gastrectomy) 13,64% (3 patients).

Operation results:

Intestinal necrosis (internal hernia):1 patient.

Volvulus (adhesion to incision site): 6 patients (simple and short adhesion).

Intestinal necrosis (volvulus due to adhesion to incision site),(simple adhesion < 1cm): 2 patients.

Strangulation due to band:10 patients (simple adhesion).

Phytobezoar after gastrectomy: 3 patients (simple adhesion).

Table 3: Operative procedures

	Operative procedures	n	%
1	Adhesiolysis, intestinal liberation (Torsion free)*	6	27,27
2	Adhesiolysis, resection of band, intestinal liberation**	10	45,45
3	Resection of intestinal necrosis .	3	13,6
4	Passing phytobezoar into colon.	2	9,09
5	Gastrostomy for phytobezoar	1	4,54
	Total	22	100

*Laparoscopic assisted operation to be performed in 2 patients (Previous colorectal resection patients)

** Laparoscopic operation to be performed in 1 patients (gynecology patient)

Discussion

Laparoscopic surgery for small bowel obstruction have been long term put into practice in Vietnam, but it has not been much implemented in K hospital. The proportion of open procedure in our report was more than 90% [4], [5].

All patients in our study had been undergoing previous abdominal opreration as gastrectomy for cancer, colectomy for colorectal cancer with median incision or hysterectomy (transversal).

According to Di Saverio[1] the prognostic factors of laparoscopic surgery for small bowel obstruction (SBO) were:

- Less or moderated abdominal distension
- Upper SBO.
- Sub-obstruction.
- SBO for band.
- Post appendectomy.
- Operation earlier than 24h of onset symptoms.

High risk factors for conversion.

- History of three abdominal surgeries.
- Small bowel dilatation more than 4cm in diameter.

Contra indications for laparoscopic surgery:

- Significant abdominal distention.
- Peritonitis.
- Instable patients (instable hemodynamic conditions), shocks.
- Cardiovascular diseases, respiratory diseases.

In report of O'Conor [2], the success rate of laparoscopic surgery for SBO was 64%, laparoscopic assisted was 6,7 % (small incision < 5 cm). The reasons for conversion were:

- Dense adhesions (28,9%).
- Intestinal resection (necrosis): 23,9%
- Reason of obstruction not found: 9,3%
- Serosal injury or enterotomy: 10,3%.
- Small and limited operated site (Intra-abdominal).
- Intra-abdominal malignancy .
- Obstruction for hernia (3%)
- Others 8,3%.

Di Saverio et al [1]: Median incision was risk factor for long duration of operation and conversion. In this study there were 21 patients having one median incision, of them 8 patients had upper median incision, 13 had upper and lower median incision and one had transversal incision.

The elapsed time between onset symptoms to operation also one important factor of success. We had in this study 70% of patients having operation earlier than 24 h and 30% more than 24h. According to Levard H [3]: The shorter this time, the higher success rate could be obtained.

Dang Ngoc Hung [4] had evaluated a group of 53 patients with PSBO: of them 52,8% got hospital admission time < 24h, the average time to operation was 68,7h. Of them, earlier than 6h was 9,4%, more than 6 h- 24h was 43,4%. The lesions: SBO for band 77,6%, volvulus was 18,4%, internal hernia 2%, phytobezoar 2,0 %. Reason for conversion: dense adhesions, 1,9%,volvulus 1,9%, enterotomy 1,9%, intestinal necrosis 1,9%.

In our study, we found abdominal pain in 100%, vomiting in 95%, bowel movement 95%, localized abdominal pain 60%.We considered that two clinical manifestations of bowel movement and localized abdominal pain were important signs to diagnose bowel strangulation or ischemia and it was necessary to perform laparoscopic exploration as soon as possible. There were two intestinal necrotic cases, of them 1 patient had ischemia due to internal hernia; other had volvulus due to simple and short adhesion to incision wound that could be performed laparoscopically (laparoscopic adhesiolysis). This patient had abdominal pain, vomiting. The plain X-ray did not revealed any fluid air level. Telebrix study showed dilatation of gastric stump but telebrix passing to colon after 12 h. CT Scan showed fluid intra abdominal, not found transition point, not found ischemia of bowel. Once laparotomy, we found volvulus due to simple adhesion to incision wound (post gastrectomy, upper median incision).

In the study of Magnite.D [6] abdominal plain X-ray showed fluid air level only 2h for post obstructive symptoms with the diagnostic accuracy by 86%. The signs on plain X-ray:

- Bowel dilatation > 3 cm.
- Colon not dilated.
-The fluid air level (small intestine) located on central abdominal area .

In this study, there were fluid air level on plain X ray by 95% of patients but not found in one patient who had necrosis. However based on clinical manifestation (localized abdominal pain, pulse >120 bpm, blood pressure < 90 mmHg), the diagnosis could be confirmed.

Result of study on multi slide CT scan of Hwang Ji-young [7]: Diagnosis of transition point by 93%,diagnosis of SBO by 91%, position of obstruction by 78,7%, the reason of obstruction by 68,1%.

Osada H [8] has studied and suggested that multi slide CT Scan can diagnose dense and band adhesion.

In our study, there were 9 SBO for band, 4 volvulus, 3 necrosis, 3 phytobezoar. CT scan only found out one volvulus.

During the operation, there were 10 patients with strangulation caused by band or simple adhesions to incision site (< 1cm) so that the operation were simple and could be performed by laparoscopic surgery. There were two patients who had operation more than 24h since the onset symptom manifested. The operative findings were simple adhesion and volvulus that needed laparoscopic assisted to perform intestinal resection if laparoscopic operation could be operated..

Duong Trong Hien [5] has reported laparoscopic surgery for SBO in series of 100 patients: The success rate was 83%; laparoscopic assisted and conversion was 37%. The risk to conversion was multiplied by 1,7 time for the surgical indication < 48h upon onset symptom but patients having operation > 48h. The conversion rate is relative high up 6,3 time if colonic gas not found on plain abdominal X-Ray. The success rate was elevated with band SBO and with SBO after appendectomy and gynecology operation.

Duong Minh Phat [9] had operated laparoscopically for 50 SBO, the success rate was 84%, laparoscopic assisted 6%, conversion rate 14%. SBO due to adhesion was 54%, enterotomy 6%, reason to conversion due to adhesion was 10%. Conversion due to previous open surgery was 87,5%, post laparoscopic surgery was 12,5%.There were 50% of conversion due to median upper and lower incision.

Naeem Goussous [10] had reported one series of 189 SBO patients that divided into 2 subgroup open vs laparoscopic surgery. They concluded that SBO for adhesions in laparoscopic group was 42% vs 65% in open one. Stricture in laparoscopic was 14% vs 5% in open group; there were dominant proportion of oncology abdominal surgery and major complication in open subgroup than laparoscopic one. There were no difference in 2 subgroup on enterotomy, death occurred during and after operation and minor complication of laparoscopic subgroup was more than the conventional operation.

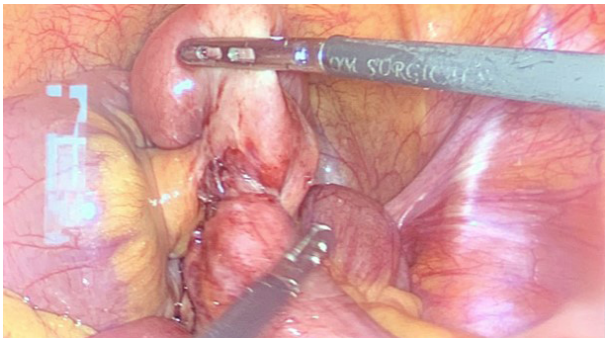

Image 1: Strangulation by band

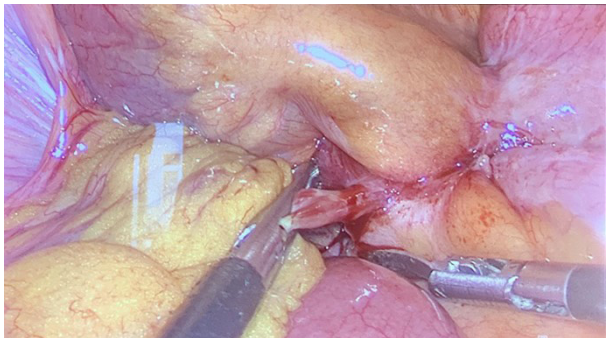

Image 2: Laparoscopic surgery for band obstruction

The SBO patient that being laparoscopically operated in ours study had history of total hysterectomy for gynecology cancer with transversal incision. Hospital admission earlier 24 h of onset symptoms. Upon examination : moderated distension, localized abdominal pain. Plain X-ray showed fluid air level, CT scan revealed SOB for bend and transition point. Operation performed revealed SOB for band that had intestinal ischemia and stricture but no need to perform the intestinal resection. Post operative period was simple and the patient was discharged on 5th day.

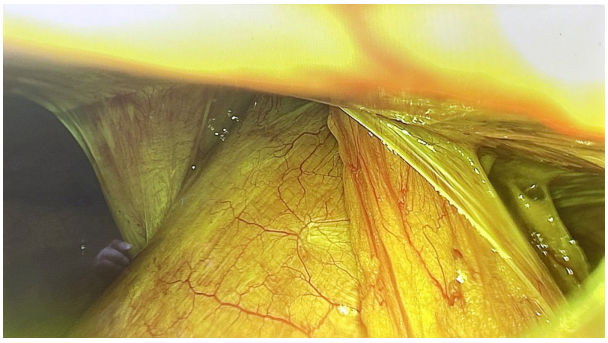

Image 3: Volvulus due to adhesion to incision site

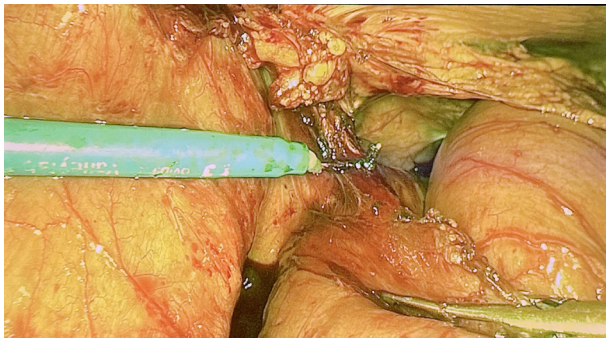

Image 4: Laparoscopic adhesiolysis

Two others SBO were operated laparoscopically. They had history of surgery for colorectal cancer with lower median incision. Operation was performed earlier than 24h of onset symptoms. They had volvulus due to adhesions to incision site but one had external hernia needed small incision for serosal injury. The other one had laparoscopic assisted operation due to bowel adhesion anastomosis of index surgery (incision < 5cm).

There were three patients with phytobezoar SBO post gastrectomy subtotal for gastric cancer. Of them, 2 of them had gastrostomy for phytobezoar and other patient was passed phytobezoar into colon. All these patients could be operated with laparoscopic assisted.

Conclusion

Laparoscopy could be performed for patient with oncologic intra-abdominal patients undergoing previous malignant abdominal or gynecology surgery. The success rate of laparoscopy or laparoscopic assisted surgery could be obtained for strangulations or volvulus, and simple adhesion (short adhesion) as well as phytobezoar obstructions.

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