



Case Series

Large Abdominal wall Defect with Darning Repair: A Case Series

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Abstract

Introduction: The abdominal wall reconstruction after operation that made abdominal wall defect causing from abdominal wall infection, abdominal wall tumor removal is one of the most challenging operation due to the prevention of surgical site infection prevention and incisional hernia. The objectives of abdominal wall reconstruction are the strengthening of abdominal wall, the prevention of the evisceration, and the prevention of postoperative incisional hernia. Despite of mesh repair still had the concerns of high rate of surgical site infection. The author had reported in 2020⁴ about the alternative way to reconstruct the abdominal wall defect called Modified Nylon darning technique that was not necessary to use mesh graft in the operation.

Methods: We reported our case series of 5 patients that reconstruction of the large abdominal wall defect using modified darning technique without using mesh graft.

Results: We described results of our modified darning technique in reconstruction of the large abdominal wall defect showed average operative time, postoperative length of stay, cost of treatment were 71 minutes, 3.6 days, and 19516.95 THB. We had one of our patients that had superficial surgical site infection (20%) that treated with local wound care. No recurrence of incisional hernia in our patients in average follow up time 10.2 months.

Conclusion: The modified darning technique should be considered for one of choices in large abdominal wall defect reconstruction. However, we should make a prospective study for confirming our results in the future.

Keywords: Large abdominal wall defect reconstruction; Modified darning technique; Repair without using mesh graft

Introduction

The abdominal wall reconstruction after operation that made abdominal wall defect causing from abdominal wall infection, abdominal wall tumor removal is one of the most challenging operation due to the prevention of surgical site infection prevention and incisional hernia. The objectives of abdominal wall reconstruction are the strengthening of abdominal wall, the prevention of the evisceration, and the prevention of postoperative incisional hernia. [1] There are many types of operation such as simple sutures of the rectus abdominis aponeurosis that had high recurrent rate (54%). After that, Ramirez showed the technique called component separation that did not require mesh graft but

the technique was more complicated and had high occurrence of skin flap necrosis (20%). [2] The study of Jabocus, et al. reported that open mesh repair had lower recurrent rate than simple suture of the rectus abdominis aponeurosis significantly (32% VS 63%). [3] In the present, mesh repair is still gold standard of elective management of abdominal wall defect reconstruction.

Despite of mesh repair still had the concerns of high rate of surgical site infection. The author had reported in 2020 [4] about the alternative way to reconstruct the abdominal wall defect after cutaneous mucormycosis infection of abdominal wall that was a contaminated field causing higher rate of postoperative wound infection called Modified Nylon darning technique that was not necessary to use mesh graft in the operation applied from the studies of Loh, et al. [5], Johnson, et al. [6], and Igwe, et al. [7] After that, we applied this technique to the patients that had large

abdominal wall defect requiring reconstruction. In this study, we reported our case series of the patient with large abdominal wall defect operated with Modified nylon darning technique.

Materials and Methods

This retrospective medical records reviews of all the patient with large abdominal wall defect operated with modified darning technique in our hospital between January 2019 and December 2021 was performed by the author. Patient demographic data, such as gender, age, body weight, height, body mass index, operative data, such as size of abdominal wall defect, the emergency status in time of operation, operative time, and results of treatment, such as postoperative length of stay, intravenous opioid drug using after operation, cost of treatment, complication after operation, and recurrence/occurrence of incisional hernia were collected. This project has been reported in line with the PROCESS criteria. [8] This study was approved by the Research Ethics Committee of our hospital under SSKH REC COE no. 003/2022.

Case 1

Female patient, aged 81, underlying hypertension, had a history of ruptured sigmoid diverticulitis that had been operated with sigmoidectomy with Hartmann's procedure, developing incisional hernia at midline laparotomy wound size 4*19 sq.cm. we operated in elective case using loop nylon no. 1 with operative time 70 minute. Postoperative length of stay was 4 days. No intravenous opioid use in this patient. Cost of treatment was 25381.50 THB. We followed this patient for 2 years without complication or recurrence.

Case 2

Female patient, aged 48, had a history of tubal resection and recurrent incisional hernia that had incisional hernia repair for 2 times with simple suture. The size of abdominal wall defect was 6*6 sq.cm. We operated in elective case using loop nylon no. 1 with operative time 40 minutes. Postoperative length of stay was 6

days. No intravenous opioid use in this patient. Cost of treatment was 18076.50 THB. We followed this patient for 10 months without complication or recurrence.

Case 3

Female patient, aged 78, underlying hypertension and hyperlipidemia, had a history of open cholecystectomy for 20 years, presented with pyomyositis of abdominal wall around previous surgical wound. We operated emergency excisional debridement of abdominal wall and had abdominal wall defect 6*7 sq.cm. in size. We repaired abdominal wall using loop nylon no. 1 with operative time 85 minutes. Postoperative length of stay was 3 days. No intravenous opioid use in this patient. Cost of treatment was 27428.25 THB. We followed this patient for 4 months and this patient had superficial surgical site infection that treated with only local wound care.

Case 4

Male patient, aged 67, had history of ruptured sigmoid diverticulitis that had exploratory laparotomy with repair sigmoid. He had incisional hernia at previous midline laparotomy wound 10*20 sq.cm. in size. We operated this patient in elective case using loop nylon no. 1 with operative time 100 minutes. Postoperative length of stay was 4 days. This patient used intravenous opioid agent for 3 times. Cost of treatment was 15387.75 THB. We followed this patient for 7 months without complication or recurrence.

Case 5

Female patient aged 57, had a history of necrotizing fasciitis at abdominal wall that had excisional debridement and turn to abdominal wall hernia 8*12 sq.cm. in size. We operated this patient in elective case using loop nylon no. 1 with operative time 60 minutes. Postoperative length of stay was 1 day. No intravenous opioid use in this patient. Cost of treatment was 11310.75 THB. We followed this patient for 6 months without complication or recurrence (Table 1).

Order	Gender	Age	Size (sq.cm.)	Op time (min)	LOS (days)	Cost (THB)	Follow up (months)
1	F	81	4*19	70	4	25381.50	24
2	F	48	6*6	40	6	18076.50	10
3	F	78	6*7	85	3	27428.25	4
4	M	67	10*20	100	4	15387.75	7
5	F	57	8*12	60	1	11310.75	6
Average			90	71	3.6	19516.95	10.2

Table 1: Description of patients.

Discussion

From the results of our study showed that we had patient that repaired abdominal wall defect using modified darning technique 5 cases in total that had average size of defect 90 sq.cm. Average operative time, postoperative length of stay, cost of treatment were 71 minutes, 3.6 days, and 19516.95 THB. We had one of our patients that had superficial surgical site infection (20%) that treated with local wound care. No recurrence of incisional hernia in our patients in average follow up time 10.2 months. In comparison with previous surgical technique in repairing abdominal wall defect such as simple suture of the rectus abdominis aponeurosis that had recurrent rate 54-63%^{1,3} or open mesh repair that had recurrent rate 32%, we reported that our modified darning technique still had no recurrence during our follow up period 10.2 months in average. When comparing with other complications such as wound complications, our modified darning technique had rate of wound complication as same as component separation.² From this reason, the modified darning technique should be considered for one of choices in large abdominal wall defect reconstruction. However, we should make a prospective study for confirming our results in the future.

Conclusion

The modified darning technique should be considered for one of choices in large abdominal wall defect reconstruction. However, we should make a prospective study for confirming our results in the future.

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