



International Journal of Surgery Science

E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2017; 1(1): 36-40
Received: 17-08-2017
Accepted: 25-09-2017

Shabir Ahmad Mir
Senior Resident, Department of
Surgery Govt. Medical College
Srinagar, Jammu and Kashmir,
India

Evaluation of Shabir's SMHS technique of closing dehiscent surgical wounds post-SSIs

Shabir Ahmad Mir

Abstract

Objective: Surgical site infection (SSI) is a common problem which often requires the wound to be opened, and the opened infection site needs to be closed back by sutures, once the wound looks okay. Suturing such sites after the infection is under control, by round body needle is difficult and time consuming. Under this background the author has developed an innovative technique for suturing these sites (once infection is under control) by using round bodied needle without any difficulty in circumstances where cutting needles are not easily available

Material and Methods: This technique was developed by Dr. Shabir during his residency at Shri Maharaja Hari Singh (SMHS) hospital Srinagar, an associated hospital of Government Medical College, Srinagar (J&K) India, hence also called as Shabir's SMHS technique. This prospective study was undertaken in the Department of Surgery, Government Medical College, Srinagar over a period of 4 years from June 2013 to June 2017. The author compared his technique with suturing by round body needle by conventional method. Patients were divided into two groups 1 and 2, corresponding to Shabir's technique and the conventional round body suturing technique, respectively. Forty patients were taken in each group.

Results: Time taken for the procedure was significantly less in Shabir's Technique ($P < 0.001$). Suture material required was significantly less in Shabir's technique ($p = 0.003$). Discomfort / pain experienced by the patients in Group 1 was significantly low ($p = 0.006$) in group 1. Accessory needle injuries were more in group 2 ($p < 0.001$).

Conclusion: In developing countries, round body prolene suture can be comfortably used for closing surgical site infection wound, once ready for suturing, when cutting needle suture is not readily available, by applying Shabir's technique without creating additional costs.

Keywords: Shabir's technique, round body, suturing, surgical site infection

Introduction

Surgical site infections (SSIs) are defined as infections occurring up to 30 days after surgery (or up to one year after surgery in patients receiving implants) and affecting either the incision or deep tissue at the operation site. Despite improvements in prevention, SSIs remain a significant clinical problem as they are associated with substantial mortality and morbidity and impose severe demands on healthcare resources ^[1].

Surgical site infections (SSIs) is a second most common type of health care associated infection (HAI). SSIs lead to increased duration of hospitalization, cost, and risk of death. Each SSI leads to more than 1 week of additional postoperative hospital days ^[2]. Surgical site infections are recognized as a common surgical complication, occurring in about 3% of all surgical procedures and in up to 20% of patients undergoing emergency intra-abdominal procedures ^[3]. Potential complications include tissue destruction, failure or prolongation of proper wound healing, incisional hernias, and occasionally bacteremia ^[4].

SSI is a common problem which often requires the wound to be opened, and the opened infection site needs to be closed back by sutures, once the wound looks okay. Suturing such sites after the infection is under control, by round body needle is difficult and time consuming. Under this background the author has developed an innovative technique for suturing these sites (once infection is under control) by using round bodied needle without any difficulty in circumstances where cutting needles are not easily available, e.g. a poor patient being operated in government hospital where sometimes only round body prolene suture stands available.

Material and Methods

Shabir's technique for surgical site infections

This technique was developed by Dr. Shabir during his residency at Shri Maharaja Hari Singh

Correspondence
Shabir Ahmad Mir
Senior Resident, Department of
Surgery Govt. Medical College
Srinagar, Jammu and Kashmir,
India

(SMHS) hospital Srinagar, associated hospital of Government Medical College, Srinagar (J&K) India, hence also called as Shabir's SMHS technique. SSIs are treated by opening adequately the incision site followed by daily dressings (especially with saline). Once the incision "looks okay", closure is done by suturing. This should be done by monofilament suture which has less predilection for supporting the infection. The author uses prolene suture for the same. It is very difficult, cumbersome and time consuming to use round bodied needle under these situations. But at the same time it is unavoidable under certain circumstances where cutting prolene suture is not easily available. Under such situations, comes the role of the author's present technique. This technique is also used in cases of delayed primary closure of high risk incisions which were left open after surgery.

Wound is cleaned with antiseptic solution. Local anesthesia with xylocaine is given at the onset of procedure. Any remaining

slough is removed. Hypodermic needle (21-22Gauge needle of commonly used 10 or 20ml syringe) is inserted from the inner side of the left wound edge and the tip of the round bodied needle (prolene suture) is inserted into the tip of the hypodermic needle and the round body needle is pushed from out to inwards with simultaneous and proportionate pull of the hypodermic needle until the tip of the round body needle pierces the wound edge, maintain the engagement of the needles throughout.

Now, the hypodermic needle is inserted from out to inwards in case of the right wound edge and then the tip of the round body needle is engaged into the tip of the hypodermic needle. The round body needle is now pushed from the inner to outer side of the wound edge along with the simultaneous and proportionate pull of the hypodermic needle until its tip is fully out in engaged state. Knotting is done and the interrupted pattern of suturing is adopted. Antiseptic dressing applied after the completion of wound closure.



Fig 1.



Fig 2.



Fig 3.



Fig 4.



Fig 5.



Fig 6.



Fig 7.



Fig 8.



Fig 9.



Fig 10.



Fig 11.



Fig 12.

**Fig 13.**

Fig 1-13: Demonstrates the various steps of Shabir's technique.

Advantage of the Technique

In cases where the round body prolene suture is the only easily available suture, the innovative technique provides the following advantages

1. Overcomes the need for cutting needle.
2. No additional costs incurred barring the requirement of a hypodermic needle.
3. Reduces the time taken for suturing the wound significantly as compared to suturing by using round body needle alone.
4. Reduces the surgeon discomfort as it needs mild force to pierce the edges of wound.
5. Reduces the chance of injuries (needle pricks) to surgeon because it is not needed to exert too much and unpredictable force to the needle.
6. While applying greater force to the round body needle against the tough and inflamed wound edge, the needle is usually damaged only after 2-3 sutures, thus need for additional sutures and increased cost. Such is not the case with the present technique.
7. In developing countries, where many government hospitals keep available only round body prolene suture, the poor patients will not be forced to purchase the costly prolene suture on cutting needle, by virtue of the present technique.
8. Reduces the patient discomfort during the procedure.
9. It is simple and easily reproducible technique.

The author compared his technique with suturing by round body needle by conventional method. Patients were divided into two groups 1 and 2, corresponding to Shabir's technique and the conventional round body suturing technique, respectively. Forty patients were taken in each group. This prospective study was undertaken in the Department of Surgery, Government Medical

College Srinagar, over a period of 4 years from June 2013 to June 2017. Patients were randomly assigned to each group.

Results

The various results obtained are depicted in table 1 to 4 and graph 1.

Table 1: Number of Patients

Group	Duodenal Ulcer Perforation repair	Post appendectomy	Elective Surgeries	Trauma Surgeries
1	20	10	5	5
2	20	10	5	5

Table 2: Age distribution of study patients

Age (years)	Group 1		Group 2		P-value
	No.	%age	No.	%age	
20-29	7	17.5	6	15	0.259
30-39	11	27.5	12	30.0	
40-49	20	50	18	45.0	
≥ 50	2	5	4	10	
Total	40	100	40	100	
Mean±SD	38.7±3.52		39.5±2.73		

*Statistically significant difference (P-value<0.05); P-value by Student's Independent t-test

Table 3: Gender distribution of study patients

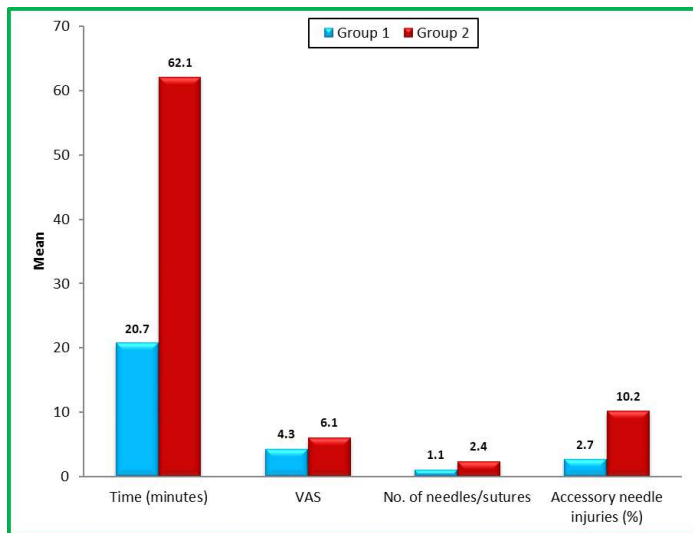
Gender	Group 1		Group 2		P-value
	No.	%age	No.	%age	
Male	26	65	23	57.5	0.603
Female	24	60	17	42.5	
Total	50	125	40	100	

P-value by Chi-square t-test

Table 4: Various parameters

Parameter	Group 1 [n=40]		Group 2 [n=40]		P-value
	Mean	SD	Mean	SD	
Time (min)	20.7	3.29	62.1	4.87	<0.001*
VAS	4.3	2.38	6.1	3.24	0.006*
No. of needles (sutures)	1.1	1.47	2.4	2.19	0.003*
Accessory needle injuries (%)	2.7	1.64	10.2	1.43	<0.001*

*Statistically significant difference (P-value<0.05); P-value by Student's Independent t-test



Graph 1: Comparison of various variables

Statistical Methods: The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean \pm SD and categorical variables were summarized as frequencies and percentages. Student's independent t-test was employed for comparing continuous variables. Chi-square test was applied for comparing categorical variables. A P-value of less than 0.05 was considered statistically significant.

After explaining the present technique to ten other surgeons, the surgeons were asked about their preference. All of them preferred the Shabir's technique.

Discussion

In general, it is difficult to simply compare the various methods of skin closure equally with one each other. There are divergent views and reports about the indications and the results of different skin closure methods according to the type of wound, anatomical location, suture technique etc. [5-7]. The general choice of a particular suture material or technique should be based on the type of the wound, the tissue characteristics, the anatomic location, the individual patient and the specific functional and anatomical requirements that are needed [8, 9].

After considering these factors, the surgeon has to decide from his own experiences and through the different reports in the current literature which material he will use [10-13].

Keeping in view the results obtained in present study, the Shabir's technique seems to be attractive. Time taken for the procedure was significantly less in Shabir's Technique ($P < 0.001$). Suture material required was significantly less in Shabir's technique ($p = 0.003$). Discomfort/pain experienced by the patients in Group 1 was significantly low ($p = 0.006$) in group 1. Accessory needle injuries were more in group 2 ($p < 0.001$). Prolene (polypropylene) is a monofilament suture. Prolene is made of isotactic crystalline stereoisomer of polypropylene with few unsaturated bonds. Polypropylene has a tensile strength more than nylon. It can easily pass through tissues and induces minimal host response. It does not adhere to the tissues and can be used as an intradermal suture [14].

Conclusion

In developing countries, round body prolene suture can be comfortably used for closing surgical site infection wound (SSI wound) once ready for suturing, when cutting needle suture is

not readily available, by applying Shabir's technique without creating additional costs. The technique can also be applied for suturing tough skin such as umbilical skin in primary suturing cases.

References

- Owens CD, Stoessel K. Surgical site infections: epidemiology, microbiology and prevention. *J Hosp Infect.* 2008; 70(suppl 2):3-10.
- Anderson DJ. Surgical site infections *Infect Dis Clin North Am.* 2011; 25(1):135-53.
- Barie PS. Surgical site infections: Epidemiology and prevention. *Surg Infect (Larchmt).* 2002; 3(Suppl 1):S9-21.
- Barie PS, Eachempati SR. Surgical site infections. *Surg Clin N Am.* 2005; 85:1115-1135.
- Gabrielli F, Potenza C, Puddu P, Sera F, Masini C, Abeni D. Suture materials and other factors associated with tissue reactivity, infection, and wound dehiscence among Plasticsurgery outpatients. *Plast Reconstr Surg.* 2001; 107(1):38-45.
- Haaf U, Breuninger H. Resorbable suture material in the human skin: tissue reaction and modified suture technic. *Hautarzt.* 1988; 39(1):23-7.
- Arco G HR. Chirurgie der Narbe. Grundlagen, Prävention und Behandlungsmethoden. *CHAZ.* 2008; 9:1-14
- Parsons RW. Scar prognosis. *Clin Plast Surg.* 1977; 4(2):181-6.
- Burke M. Scars. Can they be Minimised? *Aust Fam Physician.* 1998; 27(4):275-8.
- Ridgway DM, Mahmood F, Moore L, Bramley D, Moore PJ. A blinded, randomised, controlled trial of stapled versus tissue glue closure of neck surgery incisions. *Ann R Coll Surg Engl.* 2007; 89(3):242-6.
- Livesey C, Wylde V, Descamps S, Estela CM, Bannister GC, Learmonth ID, *et al.* Skinclosure after total hip replacement: a randomized controlled trial of skin adhesive versus surgical staples. *J Bone Joint Surg Br.* 2009; 91(6):725-9.
- Frishman GN, Schwartz T, Hogan JW. Closure of Pfannenstiel skin incisions. Staplesvs. Subcuticular suture. *J Reprod Med.* 1997; 42(10):627-30.
- Croce P, Frigoli A, Perotti D, Di Mario M. Cesarean section, techniques and skin suture materials. *Minerva Ginecol.* 2007; 59(6):595-9.
- Kudur MH, Pai SB, Sripathi H, Prabhu S. Sutures and suturing techniques in skin closure. *Indian J Dermatol Venereol Leprol* 2009; 75:425-34