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Original Research Article

Absorbable versus conventional methods for wound closures in surgeries for benign breast diseases: a randomized case control study

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ABSTRACT

Background: Surgeons and patients prefer absorbable sutures for surgical wound closure in breast surgeries which are usually continuous subcuticular sutures so that patients can skip a hospital visit for suture removal. But in case of breast biopsies authors usually put circumareolar incisions. Here authors find it difficult to put continuous subcuticular sutures. In this contest authors thought of interrupted subcuticular sutures where authors can tackle the above-mentioned limitations; while actually reducing the financial burden of the patients.
Methods: In this randomized case controlled study authors included elective general surgical procedures for benign breast diseases that was being carried out in the department of General Surgery Govt. Medical College, Kottayam for a period of 6 months starting from January 2017. Total number of cases taken are 20; 10 each in each group.
Results: The mean rank for interrupted method was 14.20 and conventional method was 6.80. Mann-Whitney U statistic was 13.000 and p value was 0.03. Since p value was less than 0.05, authors had clear evidence to reject the null hypothesis. Therefore, authors concluded that both the methods were dissimilar and based on mean rank interrupted method seemed to be better method.
Conclusions: Authors recommended interrupted absorbable subcuticular suturing technique in general surgical procedures for benign breast diseases, especially where authors used circumareolar incisions, which saved time of the surgeon and the patient. This can lead to considerable cost savings for the government without compromising clinical effectiveness or safety.

Keywords: Absorbable interrupted sutures, Circumareolar incision, Nonabsorbable suture

INTRODUCTION

The optimal method of closure of skin still remains unclear. Impaired wound healing increases cost of health care and leads to poor cosmetic outcome. Three primary types of wound closure are suturing, skin clips and tissue adhesives. Each technique has its own merits and demerits. Tissue adhesives have the advantage of being quick and easy to apply, but they are relatively expensive than other methods of wound closure. Skin staples are also fast and easy to apply, but removal can be painful and are also more expensive than sutures.[1-3] In this contest authors thought of interrupted absorbable subcuticular sutures where authors can tackle the above mentioned limitations; while actually reducing the financial burden of the patients since the same sutures used for subcutaneous sutures can be used for subcuticular sutures also. Aims and objectives of the study were to compare the interrupted absorbable subcuticular sutures and conventional wound closure techniques in surgeries for benign breast diseases.

METHODS

In this randomized case-controlled study authors included elective general surgical procedures for benign breast

diseases that was being carried out in the department of General Surgery Govt. Medical College, Kottayam for a period of 6 months starting from January 2017 after getting clearance of institutional review board. Total number of cases taken were 20; 10 in each group. Authors used 3-0 polyglactin for the interrupted absorbable sutures for skin. In this technique first pierce the subcutaneous tissue and dermis and breast fat inside out on one edge (Figure 1A) and same procedure outside in on the opposite edge (Figure 1B). The bight and the tail should be on the same side without crossing over the thread connecting the wound edges so that the knot will go into the tissues after tying. Suture on either end should be done first so that you can pull the threads towards the centre of the wound to avoid gaping at the corners. Figure 2 (a) and 2(b) shows the end results in curvilinear incisions; first one for the lesion away from the nipple areolar complex and the second one done by circumareolar incision. For the conventional methods authors used continuous subcuticular sutures or interrupted sutures with polyamide.

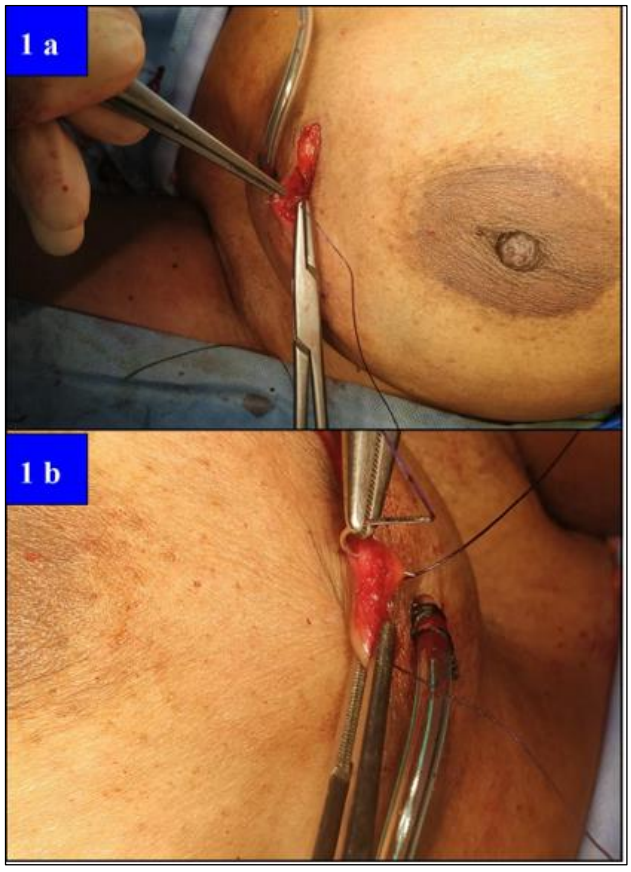

Figure 1: (a) First step where suture was taken inside out and (b) second step where suture was taken outside in.

The advantages and disadvantages of patients receiving the conventional methods of skin suturing and those receiving the interrupted absorbable subcuticular sutures were compared. The differences were assessed by comparing 8 factors, namely surgical site infection, haematoma, wound gaping, allergy to suture material, hypertrophic scar formation, chronic pain, and patient satisfaction (cosmesis and flexibility in follow up hospital visits). One point was given for each factor (first 7 points for NOs and the last one point for YES) and the patients were grouped into three subgroups with those securing 0-3 points, 4-6 points and 7-8 points. The third groupwais considered to have the most benefit and the first group the worst.

Figure 2 (a and b): The end results in two different situations first done away from the nipple areolar complex and the second one done by circumareolar incision.

All the data were analyzed using SPSS software. Histogram and skewness and kurtosis conclude no normality exists in the data. Hence a non-parametric test like Mann-Whitney U test is used to compare the methods.

Inclusion criteria

All the elective general surgical procedures for benign breast diseases including day care surgeries were included in the study after getting informed consent in every case.

Exclusion criteria

Oncological procedures apart from diagnostic procedures were excluded from the study.

RESULTS

From the histogram, it can be seen that 80% of respondents had a score of 7 in interrupted method while only 20% had a score of 7 in conventional methods (Figure 3 and 4). The histogram and table (Table 1) suggest a difference in both the approaches. Here, the mean was higher for interrupted method. Histogram and skewness and kurtosis conclude no normality exists in the data. Hence a non-parametric test like Mann-Whitney U test was used to compare the methods.

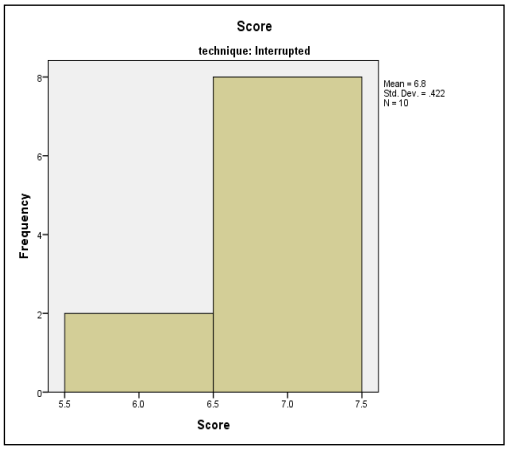

Figure 3: Score versus frequency bar plot for interrupted absorbable sutures.

Figure 3 shows 80% of respondents a score of 7 in interrupted method.

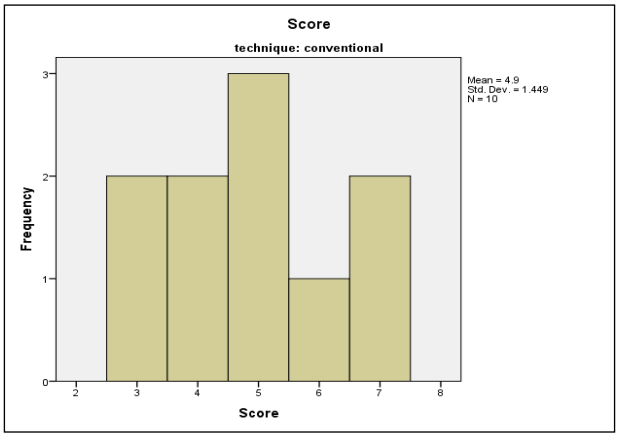

Figure 4: Score versus frequency bar plot for conventional methods.

Figure 4 shows frequency pattern in conventional methods.

Mann-Whitney U test

The output of Mann Whitney Test was observed as the mean rank for interrupted method was 14.20 and conventional method was 6.80. Mann Whitney U statistic was 13.000 and p value was 0.03. Since p value was less than 0.05, authors had clear evidence to reject the null hypothesis. Therefore, authors can conclude that both the methods were dissimilar and based on mean rank interrupted method seems to be better method.

Table 1: Ranks and statistics of each group.

	N	Mean rank	Sum of ranks
Interrupted	10	14.2	142
Conventional	10	6.80	68
Total	20		
		Score	
Mann-Whitney U		13	
WilcoxonW		68	
Z		-3.001	
Asymp Sig.(2-tailed)		0.003	
Exact Sig.(1-tailed)		0.004[b]	

DISCUSSION

Surgical wounds in breast surgeries are usually closed either by interrupted non absorbable sutures or by continuous subcuticular sutures either absorbable or nonabsorbable. Usually surgeons and patients prefer absorbable sutures for surgical wound closure in breast surgeries which are usually continuous subcuticular sutures so that patients can skip a hospital visit for suture removal. But in cases of breast biopsies authors usually put circumareolar incisions where continuous subcuticular sutures are difficult to put. In general, absorbable suture materials are used to approximate tissues where the necessity of suture removal is not anticipated. The two main qualities desired in absorbable suture materials are maintenance of maximum original tensile strength as it is needed for wound healing and wound tensile strength and early disappearance once the suture material has lost its strength.[4] Purse-string subcuticular suture for closure for breast surgery resulted in a simple and useful way of reducing the size of the areola in 1980s.[5] These facts apply in cases of benign breast surgeries also where authors are considering cosmesis, flexibility in follow up visits, and off course the cost for the health care system. Though the flexibility in follow up visits are there for continuous absorbable subcuticular sutures when compared to nonabsorbable sutures, in circumareolar incisions the closure becomes technically difficult .More than that in case if you need to release any collection you may have to release all the sutures which may lead to wound gaping and later on secondary suturing adding on to the agony for the patient. When using the boomerang approach particularly for the lesions in the medial quadrants of the breast surgeons prefers interrupted subcuticular stitches with absorbable sutures.[6] Zhong-tao et al in one study, used antibiotic coated polyglactin suture patients had significantly better cosmetic outcomes and lower incidence of surgical site infection than those with silk sutures.[7]

Interrupted subcuticular sutures were also tried in breast cancer surgeries without suction drain.[8] Farley et al, and Bogetti P also used interrupted absorbable subcuticular sutures for wound closure.[9,10] Considering all the above mentioned facts authors thought of interrupted absorbable subcuticular sutures where authors can have the benefits of interrupted nonabsorbable sutures and absorbable sutures secondly the same suture material used for subcutaneous sutures can be used for subcuticular sutures also; in our study authors used 3-0 polyglactin for subcutaneous as well as subcuticular suturing. Apart from cosmesis by this technique authors can avoid let opening of the whole wound for evacuation of haematoma or any collection. Since p value is less than 0.05 in this study, authors have clear evidence to reject the null hypothesis. Therefore, authors can conclude that both the methods are dissimilar and based on mean rank interrupted absorbable subcuticular suturing method seems to be better method. patients were actually more satisfied with interrupted subcuticular methods than in conventional methods as the follow up visits were more flexible, saving time of the patients and surgeons so that they can be assessed after the early inflammatory stage. Not only that, from the health care provider's point of view authors can save one suture material per patient which is a huge financial benefit and decrease the wastage of resources in long term.

CONCLUSION

Interrupted absorbable subcuticular sutures are recommended for surgeries for benign breast diseases especially where authors use circumareolar incisions. This method is superior in terms of cosmesis, time saving; for the patient and the surgeon and above all brings financial benefits to the health care system.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Review Ethics Committee of Government Medical College, Kottayam; IRB No: 51/2016

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