ORIGINAL ARTICLE

Comparison of Steri Strip VS Suture Closure of Facial Lacerations

AMIR ALI, AQEEL SAFDAR, ASIF RASHEED, *MAHEEN QASIM*

ABSTRACT

Aim: To compare mean per operative pain and mean operative time of steri strip vs suture closure of facial lacerations.

Methods: A total of 190 children of either sex between 05-12 years of age with laceration less than 12 hours old and Laceration less than 3cm in length were included in the study from Trauma Centre Combined Military Hospital Rawalpindi during 2014 while the children with lacerations on areas of High tension or mobility (nose, mouth), grossly contaminated lacerations and laceration requiring deep sutures were excluded from the study.

Results: In our study, mean±sd was calculated as 8.88±2.22 and 8.51±2.18 in Group-A and B respectively, 59(62.11%) in Group-A and 53(55.79%) in Group-B were male while 35(37.89%) in Group-A and 42(44.21%) were females, comparison of mean per operative pain was done, pain was recorded 7.54±3.32 in Group-A and 28.93±3.56 in Group-B, p value was calculated as 0.0001 which shows significant difference between the two groups. Comparison of mean operative time was done, it shows 9.86±1.28 in Group-A and 19.43±1.51 in Group-B, p value was calculated as 0.000 which shows significant difference between the two groups.

Conclusion: We concluded that there is a significant difference between steri strip and suture closure in terms of mean per operative pain and operative time score.

Keywords: Steri strip, suture closure, facial lacerations

INTRODUCTION

Facial lacerations are a common complaint for pediatric patients presenting to the emergency department. Tissue adhesives are commonly used to replace Standard Wound Closure (SWC) in the management of surgical and traumatic wounds. The literature investigating the use of tissue adhesives is vast, but the variability of interventions, wound sizes and locations, participant ages, and outcome measures has lessened comparisons among tissue adhesives and SWC Tissue adhesives significantly lowered the time to complete the procedure, levels of pain, and rate of erythema[1]. In one study over four percent of patients presenting to a busy urban emergency room had a simple linear facial laceration less than 2 cm in length[2-3]. M's Steri Strip Skin Closures are adhesive strips with reinforcing filaments which represent another alternative to sutures for simple low-tension facial lacerations. Steri-Strip S permits faster wound closure than suture[3]. The wound edges are opposed and held in place by the application of Steri-Strips[4]. Topical cyanoacrylate skin adhesives offer many advantages over traditional wound closure devices[5]. Tissue adhesives significantly lowered the time to complete the procedure, levels of pain, and rate of erythema.[6] Both tissue adhesives and adhesive strips are excellent "no needle" alternatives for the closure of laparoscopic port-site incisions in children.[7] The advantages of tissue adhesives have been reported due to them satisfactory, the application being easily learnt, time-saving, and being less painful to sutures8. However, Laceration repair using sutures is anxiety producing to the child. The child often must be restrained or sedated to allow completion of the procedure. Suturing is time intensive.

To the best of our knowledge, no such study has been conducted in Pakistan. The reason behind this study was to identify the better surgical procedure in order to reduce mean per operative pain and mean operative time in facial lacerations repair in children.

MATERIAL AND METHODS

A total of 190 children of either sex between 05-12 years of age with laceration less than 12 hours old and Laceration less than 3cm in length were included in the study from Trauma Centre Combined Military Hospital Rawalpindi during 2014 while the children with lacerations on areas of High tension or mobility (nose, mouth), grossly contaminated lacerations and laceration requiring deep sutures were excluded from the study. Informed consent was taken for surgery using personal data for research. Patients were

---

Department of Paediatric Surgery, CMH, Rawalpindi
Correspondence to Dr. Amir Ali Email: aamy54_aa@yahoo.com

randomly allocated into two groups, A (Study Group) and B (Controlled Group), by random allocation software 1.0.0. Patients in both groups underwent repair of facial lacerations after thorough cleansing and irrigation. In Group A, repair was performed with 3M Steri Strip Skin Closures which were placed perpendicular to the wound edges. A second layer was placed perpendicular to the first layer. While in group B, Lidicaine local anesthetic agent was used, repair was performed with non absorbable suture and performed by the postgraduate trainees.

Outcome variables included time required to perform wound closure from start of procedure to the end of procedure and Pain evaluated by Faces Pain Scale Revised. Patients were asked to point the face on the scale according to severity of pain perceived.

The collected data was entered and analyzed by using SPSS version 16. Descriptive statistics were calculated for variables, peroperative pain and operative time. For quantitative variables, age, pain score, operating time mean ± standard deviation was calculated and for qualitative variables like gender were expressed as frequency and proportion. For comparison of means in two groups independent sample t test was used. P values less than 0.05 was considered significant.

RESULTS

In our study, mean±sd was calculated as 8.88±2.22 and 8.51±2.18 in Group-A and B respectively. Patients were distributed according to gender, 59(62.11%) in Group-A and 53(55.79%) in Group-B were male while 36(37.89%) in Group-A and 42(44.21%) were females (Table 1).

Comparison of mean per operative pain was done, pain was recorded 7.54±3.32 in Group-A and 28.93±3.56 in Group-B, p value was calculated as 0.0001 which shows significant difference between the two groups (Table 2).

Comparison of mean operative time was done, it shows 9.86±1.28 in Group-A and 19.43±1.51 in Group-B, p value was calculated as 0.000 which shows significant difference between the two groups (Table 3).

Table 1: Gender Distribution (n=190)

Gender	Group-A	Group-B)
Male	59(62.11%)	53(55.79%)
Female	36(37.89%)	42(44.21%)
Total	95(100%)	95(100%)

Table 2: Comparison of Mean Per Operative Pain (n=190)

Mean per operative pain	Group-A (n=95)	Group-B (n=95)
	7.54±3.32	28.93±3.56

P value=0.0001

Table 3: Comparison of Mean Operative Time (n=190)

Mean operative time	Group-A (n=95)	Group-B (n=95)
	9.86±1.28	19.43±1.51

P value=0.000

DISCUSSION

Facial lacerations are a common complaint for pediatric patients presenting to the emergency department. Traditionally, sutures have been the standard for repair of these lacerations. The advent of topical anesthetics such as lidocaine, epinephrine, and tetracaine has made the repair of simple facial lacerations almost painless. However, several drawbacks to the use of sutures remain. Laceration repair using sutures is anxiety producing to the child. The child often must be restrained or sedated to allow completion of the procedure. Suturing requires advanced training to ensure a good cosmetic outcome and is time intensive.

We planned this study, considering the fact that the best of our knowledge, no such study has been conducted in Pakistan, so it was a need to identify the better surgical procedure in order to reduce mean per operative pain and mean operative time in facial lacerations repair in children.

In our study, 42(44.21%) in Group-A and 51(53.68%) in Group-B were between 5-8 years while 53(55.79%) in Group-A and 44(46.32%) in Group-B were between 9-12 years of age, mean±sd was calculated as 8.88±2.22 and 8.51±2.18 respectively, 59(62.11%) in Group-A and 53(55.79%) in Group-B were male while 36(37.89%) in Group-A and 42(44.21%) were females, comparison of mean per operative pain was done, pain was recorded 7.54±3.32 in Group-A and 28.93±3.56 in Group-B, p value was calculated as 0.0001 which shows significant difference between the two groups. Comparison of mean operative time was done, it shows 9.86±1.28 in Group-A and 19.43±1.51 in Group-B, p value was calculated as 0.000 which shows significant difference between the two groups.

Our findings are in agreement with previous studies carried out by Simon the mean±standard deviation of pain is 8(34.68) with adhesives and 29(33.18) with standard suture closure. The mean±standard deviation for time with adhesives was 7(10.91) and with standard suture closure it was 17(11.28)[9].

William T and colleagues[10] compared the short-term complications and long-term cosmetic outcomes of simple facial lacerations closed with 3M Steri Strip Skin Closures or Dermabond and concluded that Steri Strip Skin Closures remain an inexpensive alternative to closure of simple facial wounds in children. Short-term complications and long-term

cosmetic outcomes are similar in wounds closed with Steri Strip skin closures and Derma bond tissue adhesive.

Reinforced Steri Strip Skin Closures are adhesive strips with reinforcing filaments which represent another alternative to sutures for simple low-tension lacerations. They are inexpensive, easy to apply, and spare the child the need for potentially painful and anxiety-producing sutures. Adhesive strips have been shown to provide similar and, in some cases, superior cosmetic results to skin stapling[11-14]. They also appear to decrease infection risk compared with sutures or staples[15]. Many pediatricians have used adhesive strips as an alternative to suturing for the closure of simple facial lacerations in children.

The alternate hypothesis of the study that “there is difference between steri strip and suture closure in terms of mean per operative pain and operative time score” is justified according to the results of the current study. However, our magnitude is primary in our country and further trials are required to authenticate our findings.

In light of above, we are of the view that there is a significant difference between steri strip and suture closure in terms of mean per operative pain and operative time score.

REFERENCES

1. Beam JW. Tissue adhesives for simple traumatic lacerations. J Athl Train. 2008;43(2):222-4.
2. Singer AJ, Kinariwala M, Lirov R, Thode HC Jr. Patterns of use of topical skin adhesives in the emergency department. Acad Emerg Med. 2010;17(6):670-2.
3. Kerrigan CL, Homa K. Evaluation of a new wound closure device for linear surgical incisions: 3M Steri-Strip S Surgical Skin Closure versus subcuticular closure. Plast Reconstr Surg. 2010;125(1):186-94.
4. Davis M, Nakhdjevani A, Lidder S. Suture/Steri-Strip combination for the management of lacerations in thin-skinned individuals. J Emerg Med. 2011;40(3):322-3.
5. Singer AJ, Quinn JV, Hollander JE. The cyanoacrylate topical skin adhesives.Am J Emerg Med. 2008;26(4):490-6.
6. Beam JW. Tissue adhesives for simple traumatic lacerations. J Athl Train. 2008;43(2):222-4.
7. Romero P, Frongia G, Wingerter S, Holland-Cunz S. Prospective, randomized, controlled trial comparing a tissue adhesive (Dermabond™) with adhesive strips (Steri-Strips™) for the closure of laparoscopic trocar wounds in children. Eur J Pediatr Surg. 2011;21(3): 159-62.
8. Gulalp B, Seyhan T, Gursoy S, Altinors MN. Emergency wounds treated with cyanoacrylate and long-term results in pediatrics: a series of cases;what are the advantages and boards? BMC Res Notes. 2009;2:132.
9. Simon HK, McLario DJ, Bruns TB, Zempsky WT, Wood RJ, Sullivan KM. Long-term appearance of lacerations repaired using a tissue adhesive. Pediatrics 1997;99(2):193–5.
10. Zempsky WT, Parrotti D, Grem C, Nichols J. Randomized Controlled Comparison of Cosmetic Outcomes of Simple Facial Lacerations Closed With Steri Strip(TM) Skin Closures or Dermabond(TM) Tissue Adhesive. Pediatric Emergency Care 2004; 20: 519-24.
11. Ferris AA, Henry FE. A comparative study of sutureless and suture wound closure. J Am Osteopath Assoc. 1966;65:1082–5.
12. Connolly WB, Hunt TK, Zederfeldt B, et al. Clinical comparison of surgical wounds closed by suture and adhesive tapes. Am J Surg. 1969;117:318–22.
13. Skoog T. Porous tape in wound closure, skin grafting, and wound dressing. Acta Chir Scand. 1963;126:383–7.
14. Pepicello J, Yavorek H. Five year experience with tape closure of abdominal wounds. Surg Gynecol Obstet. 1989;169:310–14.
15. Hirshman HP, Schurman DJ, Kajiyama G. Penetration of Staphyloccus aureus into sutured wounds. J Orthop Res. 1984;2:269–71.