

# Frequency of Wound Discharge and Scar Cosmesis in Patients with Tissue Adhesive Skin Closure in Inguinal Hernia

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### ABSTRACT

**Objective:** To determine the frequency of wound discharge and scar cosmesis in patients with tissue adhesive skin closure in inguinal hernia.

**Study Design:** Descriptive longitudinal study

**Place & Duration:** Jinnah postgraduate medical centre, Department of General surgery, from 4<sup>th</sup> February 2018 to 3<sup>rd</sup> August 2018

**Material and Methods:** Total 231 patients underwent inguinal hernia surgery . Absorbable sutures were used to close up the wounds. Tissue adhesive was used for the apposition of skin. Cosmesis was categorized as average, good and excellent. Only excellent was labeled as acceptable.

Descriptive statistics were calculated. Stratification was done and post-stratification chi square test was applied. P-value less than 0.05 was taken as significant.

**Results:** The mean age of study subjects was  $43.92 \pm 10.17$  years. The wound discharge was observed in 10.8% cases. The acceptable cosmesis was observed in 91.3% cases. Good outcome was observed in 5.2% cases and average outcome was observed in 3.5% cases. As per results of categories of cosmesis the acceptable cosmesis was observed in 211 cases. Non acceptable cosmesis was observed in 8.7% cases.

**Conclusion:** 2-cyanoacrylate was found to be an effective and a reliable method of wound closure, yielding acceptable cosmetic results.

**Keywords:** Wound Discharge, Acceptable Cosmesis, Tissue Adhesive Skin Closure, Inguinal Hernia

## INTRODUCTION

It is a frequent surgical procedure to correct an inguinal hernia. The inguinal hernia is the most common type of abdominal wall hernia, occurring in 75% of all cases globally.<sup>3,5</sup> According to estimates, more than 20 million inguinal hernia repairs are expected to be performed each year around the world, with national rates varying between 100 and 300 procedures per 100,000 people. An inguinal hernia can be treated using a variety of procedures, including general anaesthesia, epidural anaesthesia, paravertebral block, local anaesthetic, and tissue adhesive.<sup>7</sup> Many studies show that tissue adhesives are an excellent way to close an inguinal hernia. Eight tissue adhesives can be used quickly, easily, and cost-effectively to seal wounds, maximising patient satisfaction and enhancing wound appearance. Because they are less likely to cause infection and tear than other types of surgical fasteners (such as sutures and staples) and are also more aesthetically pleasing, tissue adhesives are becoming increasingly popular. Adhesives for tissues reduce the necessity for suture removal and the risk of a needle stick injury for the patient. Invading germs are kept at bay with the help of this barrier.<sup>4</sup> Tissue adhesives' use in clinical practise and a variety of specialised fields has grown significantly during the previous decade.

Closing the periorbital tissue with sutures is the most common method. Research into alternative approaches and new developments will be pursued if this process, while beneficial, introduces any difficulties. Repairing tissue shape and function with minimal morbidity is the goal of tissue adhesives. This is due to the very limited data available to us in our local area about how to close wounds with tissue glue adhesive. Patients undergoing inguinal hernia surgery have their skin sealed using tissue glue adhesive. Until more evidence shows that tissue adhesives are superior, this treatment will be advocated and used to enhance wound drainage and provide an acceptable aesthetic in the future.

## METHODOLOGY

From the 4th of February to the 31st of August, researchers from Karachi's Jinnah postgraduate medical centre conducted a descriptive longitudinal study. According to Open Epi Info 7, 231 individuals were estimated using the 95 percent confidence interval, the 95 percent confidence interval, and the 3 percent margin of error.

It was a non-probability sequential sampling strategy that covered all patients receiving inguinal hernia repair between the ages of 25 and 60. Recurring hernias were also excluded, as were patients with severe lung disease (FEV<sub>1</sub> > 70) or a confirmed cancer biopsy report, Patients with any of these conditions were also excluded from the study.

Informed consent was obtained after a detailed explanation of the study was given to each participant. The population's basic demographic parameters were recorded. In order to conduct the study, the hospital's Ethics and Research Committee had to provide the approval. All patients had herniotomies with extensive ligation of the hernial sac's internal inguinal ring by a skin crease incision. A board-certified speciality surgeon with over five years of experience conducted the surgery. Absorbable sutures were used to seal the incision during this procedure. This procedure used tissue adhesive for the skin to stick to each other.

The wounds were examined for discharge on the fourth day. Patients were sent home with bandages and drugs to be used as needed until the illness was completely resolved. Good, average, or exceptional: Cosmeceuticals were graded by severity of scarring (minimal to moderate scarring) (clean cut, smooth scar line). As a result, only the most positive conclusion could be accepted. All data was entered into a pre-designed proforma by the researcher. SPSS Version 20.0 was used for all data entry and analysis. The mean and standard deviation of a quantitative variable were calculated using descriptive statistics. Percentages were used to tally up qualitative traits. To determine statistical significance (a p-value of  $\leq 0.05$ ), a Chi square test was used. The number 5 has appeared numerous times throughout the text.

## RESULTS

Total 231 patients of male gender with age between 25 to 60 years, who undergone inguinal hernia surgery, were included in this study to determine the frequency of wound discharge and acceptable cosmesis in patients with tissue adhesive skin closure. The mean age of study subjects was  $43.92 \pm 10.17$  years. The wound discharge was observed in 10.5% cases. The results about categories of cosmesis revealed that excellent outcome was observed in 91.3% cases, good outcome was observed in 5.2% cases and average outcome was observed in 3.5% cases. As per results of categories of cosmesis the acceptable cosmesis was observed in 211 cases. Non acceptable cosmesis was observed in 5.7% cases. (TABLE 1) Stratification with respect to age of outcome i.e. wound discharge and acceptable cosmesis was done which showed insignificant difference among the groups ( $p > 0.05$ ). (TABLE 2, 3)

**TABLE 1: Descriptive statistics of study variables:**

Variables	n ( % )
<b>Age in years (Mean+SD)</b>	43.92+10.17
<b>Wound Discharge</b>	
Yes	25(10.5%)
No	206(89.5%)
<b>Scar cosmesis</b>	211(91.3%)
Excellent	12(5.2%)
Average	3(3.5%)

**TABLE 2: Stratification of wound discharge with respect to age**

Age C Groups	Wound Discharge		P-value
	Yes	No	
<—45 years (n= 118)	15	103	0.345
>45 years (n=113)	10	103	

**TABLE 3: Stratification of acceptable outcome with respect to age:**

Age Groups	Acceptable outcomes		P-value
	Yes	No	
<—45 years (n= 118)	106	12	0.404
>45 years (n=113)	105	8	

## DISCUSSION

Worldwide, inguinal hernia repair is one of the most common surgeries. It's a simple one-day surgery with minimal danger. As an alternative to the traditional needle-and-thread method, only recently have staples, adhesive tapes, and tissue adhesives been licenced for therapeutic use. When employing tissue adhesives (glues), there is no risk of needle stick damage because the patient does not have to remove the stitches. Many of the drawbacks of other procedures, such as the possibility of infection and the formation of a noticeable scar, are eliminated.<sup>14</sup>

Cyanoacrylate adhesives have been utilised in a variety of applications since its inception in 1949.<sup>15</sup> Plasticizers and stabilisers were combined to make tissue adhesives that were both stronger and more flexible, without generating any side effects when applied to the skin.<sup>16</sup> Tissue glue can be used to close wounds instead of more traditional methods. In trauma, emergency, paediatric, gynaecological, and general surgery departments, skin adhesive is becoming increasingly popular.<sup>17</sup>

Academics have been working for years to improve wound closure methods and applications. To now, only a fraction of the enormous latent potential of tissue adhesives research has been realised. Tissue adhesives have become increasingly popular for treating minor wounds, allowing patients to escape the discomfort of harsh local anaesthetic injections. Skin wounds are frequently treated with 2-octylcyanoacrylate in a variety of surgical specialties. Inguinal hernias, cerebrospinal fluid leaks, cartilage, bone, and skin have all been repaired using this surgery.

The health of the patient depends on the wound's cosmesis. Various surgical techniques have been utilised by different surgeons in order to achieve quick, affordable, or consistent skin apposition in published series. It has been found that there is no substantial difference in the cosmetic outcome between tissue adhesives and traditional wound closure, or between different tissue adhesives.<sup>19</sup> 2-octylcyanoacrylate has also been demonstrated to exhibit bacteriostatic qualities, indicating its appropriateness for surgical wound closure. 8,10,11 As Quinn et al.<sup>20</sup> demonstrated, the wound

sealant 2-octylcyanoacrylate is not only safe in the presence of germs, but also antibacterial against a number of common skin and hospital illnesses.

When simply 2-octylcyanoacrylate was administered to the surgical wound, Khurana et al.<sup>23</sup> saw a significant reduction in scarring. Khurana et al. found no infections after using 2-octylcyanoacrylate as a bacteriostatic sealant. Wound treatment with 2-octylcyanoacrylate may help to keep infection-causing germs at bay.

When a hernia repair wound is treated with tissue adhesive, the goal of reducing post-operative problems (wound drainage) and improving overall scar appearance is achieved. A whopping 10.8% of wounds leaked pus, but in an impressive 91.3 percent of those, the appearance was flawless. Tissue adhesive's ability to close surgical incision wounds has been studied in numerous randomised controlled trials. Wound closure with tissue adhesives was highly successful in this study.<sup>24</sup> Tissue adhesive and subcuticular monocryl were shown to be equally effective in wound closure in a prospective RCT.

There is a tissue adhesive that has been approved by the FDA because of its ability to kill staphylococci, pseudomonas and E.coli. When it comes to cosmetics and infection prevention, sutureless wound closure is an excellent option. Tissue adhesive, which has a minimal toxicity to tissues, is employed in facial operations.

There were no differences in wound appearance or wound healing with the use of tissue adhesives, including 2-octylcyanoacrylate (2-OCCA).<sup>26</sup> No damage or necrosis of the wound was seen over the investigation's duration due to the 2-octyl cyanoacrylate's suitability for experiment. Clinical findings and efficacy were comparable when compared to the traditional method of wound closure. The use of 2-Octyl cyanoacrylate instead of normal suture material is therefore justified.<sup>27</sup>

A faster procedure that also produced an aesthetically pleasing result would make it easier to close surgical incisions, and this is the gold standard for measuring the efficacy of surgical wound healing. Tissue adhesive has been proved in nearly every trial to be a time-saving and aesthetically pleasing technique for healing skin injuries. To repair an inguinal hernia incision, researchers found that tissue adhesive was effective and time-saving.

## CONCLUSION

Two-cyanoacrylate wound closure has been shown to be safe and effective, with acceptable cosmetic results. It does not induce skin necrosis, infection, or dehiscence because it is fast and does not compromise the wound's integrity. This method of wound closure is both simple and effective in compared to the standard method. As there are no needles used, no wound dressing or stitches are necessary after surgery, and both the surgeon and the patient are very pleased with results.

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