

Comparison of N-Butylcyanoacrylate, Adhesive tapes and Sutures for Wound Closure.

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I. Introduction:

The most popular technique for healing wounds is still suture, which has been used for millennia. There are drawbacks to sutures. Due to these drawbacks, wound closure alternatives have been sought after. Adhesive glue and adhesive tapes are a couple of the appealing solutions that are currently offered. Since it was first discovered, adhesive glue has been applied to traumatic wounds for more than three decades(1). The use of adhesive glue for surgical incisions has received recent attention. Only a small number of clinical studies have been done to support this indication. The application of adhesive tape for wound closure is an additional technique. Compared to glue and sutures, tape is less expensive. This study compared the results of closure surgical incisions shut using traditional sutures, tapes, and adhesive glue(2).

II. Aims And Objectives:

The study was conducted to compare the use of sutures, adhesive glue and adhesive tape for closure of surgical incision wound. The results were compared in terms of: wound dehiscence, wound infection, time taken for wound closure, costs incurred, and cosmetic appearance.

III. Materials And Methods:

This is a prospective, randomized control study conducted at Department of General Surgery, MIMS, Nellimarla from 2021 January to 2022 December. The sample size was 60.

Inclusion criteria: Three groups of patients undergoing elective hernia surgery were randomly assigned, and the skin incision was then closed with suture, adhesive glue, or adhesive tape.

Exclusion criteria: Patients with a history of keloid or hypertrophic scars, diabetes mellitus, tuberculosis, steroid use, connective tissue problems, drug allergies, or known cyanoacrylate or formaldehyde allergies were excluded from the study.

The patients were randomly categorized into three groups A (Cyanoacrylate gel), B (Adhesive tapes) and C (Sutures).

IV. Results:

The mean age of the study population is 34.5 ± 6.5 years. The mean age of group A is 32.5 ± 5.6 years, group B is 35.9 ± 6.6 years and group C is 38.6 ± 4.5 years. Males were 41 (68.3%), females were 19 (31.66%). The mean length of the suture in group A, B and C were 6.6, 5.8, 6.2 cm respectively. There was no significant difference between the groups ($p < 0.05$).

Parameter	Gel	Tapes	Sutures	P -value
Wound dehiscence	0	0	1	0.02
Wound infection	0	0	1	0.02
Time in seconds	228	236	269	0.04
Cost incurred	600	70	190	0.03
Patient satisfaction	Good	Good	Average	-

V. Discussion:

In our study, we compared incision closure with conventional sutures, tissue adhesive tapes and cyanoacrylate gel. 1 case got wound infection and wound dehiscence in suture group. None of the other patients got wound infection or wound dehiscence. Time in seconds for the skin closure was more in sutures group when compared to the other two groups and the difference is statistically significant. Cost incurred in high in the

cyanoacrylate group when compared to the other 2 groups and the difference is statistically significant. Patient satisfaction is good among both group A and B but average in group C.

Cyanoacrylates are used commercially as fast acting glue with significant bonding capacity. It was first synthesized by Airdis in 1949. The application of cyanoacrylates as an adhesive and its use in surgery was described by Coover et al(3). The tensile strength is high and optimum for closure of surgical incisions, it has inherent bacteriostatic property. The application of adhesive glue is quick and it can also be used for embolization of cerebral Arteriovenous malformations and it is degraded by the body thus help in creation of nano drugs with sustained release profiles. They are also indicated in treatment of esophageal, duodenal, gastric and colonic varices by endoscopy(4).

The adhesive tapes or strips were used for surgical wound closure since the 1500. I was first described by Pare in France. He utilized strips of sticky plaster for closure of facial wounds after trauma(5). They have evolved today into porous paper tapes that ensure proper apposition of the wound edges. They also give additional reinforcements after application of suture or adhesive glue. Often use of tincture of Benzoin help in tape adherence(6).

VI. Conclusion:

Adhesive gel is better in wound closure in terms of time taken for closure. Adhesive tape is better in terms of cost incurred. Both adhesive gel and tapes are better than sutures in terms of patient satisfaction and wound infection and wound dehiscence.

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