



ORIGINAL RESEARCH PAPER

General Surgery

COMPARATIVE STUDY OF EFFICACY OF DIATHERMY INCISION VERSUS SCALPEL INCISION IN PATIENTS UNDERGOING LICHTENSTEIN HERNIOPLASTY

KEY WORDS:

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ABSTRACT

Electrocautery in surgery is widely used except for the skin incisions ,this is because of fear of scarring of tissues, post operative pain, and wound infection in view of devitalisation of tissues. This study compares the scalpel incisions with electrocautery incision over skin in patients undergoing hernia repair.

INTRODUCTION

Incision is a cut or slit to gain access to underlying structures . Cauterization is a medical term describing burning of body to remove or close a part of it. Electrocautery is used increasingly for tissue dissection, although fears of excessive scarring and poor wound healing have curtailed its widespread use for skin incision. Traditionally incisions are made with stainless steel scalpel. These incisions are supposed to be more bloody and painful . To overcome this problem many advanced techniques have come viz , laser and cavitron electron surgical aspirator but the cost of above said methods limits its usage. Electrocautery which is available in all surgical theaters is less frequently used for skin incisions for the fear of tissue damage, post operative pain and scarring. Recent advances and studies have shown that electrocautery can be used for skin incision without any postoperative complications like wound infection and scarring and less post operative pain.

This study is undertaken to alleviate the fear of using electrocautery for skin incisions in the surgical community.

AIM AND OBJECTIVES

To evaluate and compare the post operative pain and post operative complications in electrocautery incision and scalpel incision over skin in patients undergoing Lichtenstein hernioplasty.

MATERIALS AND METHODS

A prospective randomized study involving 60 patients undergoing mesh repair for inguinal hernia was done over a period of 1 year. The study group was randomized into 2 groups, Group A skin incision using electrocautery , and Group B incision with scalpel. Postoperative pain, wound complication and requirement of analgesics were compared between both the groups. The results were finally analyzed and compared for the both the groups using Mann-Whitney U Test.

Source of data: 60 cases undergoing hernia repair for inguinal hernia in MADRAS MEDICAL COLLEGE AND HOSPITAL, Chennai over 1 year.

METHOD OF COLLECTION :

Study Design: Randomized control trial. Randomization was

done according to lot method. The observer was blinded to the type of incision used and his observation was based on the predefined criteria.

Sample Size: 60 Cases

- 1) In 30 cases skin incision was made with electrocautery.
- 2) In 30 cases skin incision was made with conventional scalpel.

Sample size was arrived based on pain score reduction in previous study ,a pain score reduction of 30%, with p value of 0.05 and power of 80% at 24hrs , sample size was calculated to be 30 in each group to get significant results.

Duration: One year . Exclusion Criteria:-

- 1. Complicated inguinal hernia like irreducible hernia, obstructed hernia, strangulated hernia.
- 2. Preoperative use of analgesics for > 3 days per week for >3months.
- 3. Pediatric patients.
- 4. Patients with chronic pain >3months.
- 5. H/O drug or alcohol abuse
- 6. Severe Hepatic ,Renal ,CVS, dysfunction.
- 7. Diabetes Mellitus.
- 8. Immunocompromised status.

OUTCOME

- 1. Postoperative pain was measured using pictorial visual analogue scale at 6, 12 and 24 hours. For patient's with pain score of >4 Inj. Diclofenac 50 mg IM was given.
- 2. During post operative period complications noted during hospital stay were measured in terms of formation of

- Seroma-collection of serous discharge in suture site.
- Hematoma-collection of bloodclots.
- Purulent – collection of purulent discharge.

STATIATICAL ANALYSIS :

The results were analyzed and compared for the both the groups using Mann- Whitney U Test, and percentage of type of complication at incision site were calculated.



METHOD

After obtaining consent, patients were randomized and divided in two groups A and B .In Group A- Incision was made using electro cautery needle using pulse sine wave current and power of 70 watts. Hemostasis was achieved with forceps coagulation. In Group B-Skin incision was made using scalpel , bleeding was controlled by forceps coagulation using pulse sine wave with a power of 30 watts. For all patients standardized incision was made along medial 3/5 and 2.5 cms above and parallel to inguinal ligament. All the procedures were done under standardized spinal anesthesia. Premedication given was Inj.Cefotaxim 1 gram ,30 minutes before procedure . Closure of the abdominal layer was done with continuous prolene for External Oblique aponeurosis, intermittent vicryl for subcutaneous tissue and vertical mattress suture with 3-0 Nylon for skin closure.

RESULTS

1. Patient Demographs : 60 patients with inguinal hernia were randomized prospectively to either electrocautery group or scalpel group for skin incision . There were no significant demographic difference between both the groups. Mean age of patient in group A -Electrocautery group was 47.8±16.21 and in group B - scalpel group was 47.7 ±13.95.
2. Post operative pain. Post operative pain was assessed by visual analogue scale at 6 , 12, 24 hrs after the surgery.

TIME	ELECTROCAUTERY	SCALPEL	MANN WHITNEY U TEST
6 hrs	6.6±0.81	6.7±0.53	P = 0.475
12 hrs	3.8± 0.83	3.7±0.64	P = 0.556
24 hrs	2.5±0.86	2.4±0.51	P = 0.762

In our study results were analyzed with Mann Whitney U Test. There was no significant difference between both the groups.

3. Analgesic requirements post operatively : Dose of analgesic i.e Inj. Diclofenac 50 mg im was given in both groups postoperatively. Results were analysed using Mann Whitney U test. Dose requirements were similar in both the groups. Dose of analgesics (Mean±SD) in Electrocautery 0.66±1.8; Scalpel 0.48±1.6(P = 0.499 Mann-Whitney U test (Adjusted for ties))
4. Local wound complications : Overall wound complications were assessed for 7 days post operatively. In our study we assessed complications like seroma , haematoma, and purulent collection.

Seroma in both groups were comparable. Although scalpel group shows more hematoma [20%], difference was not statistically significant. Purulent collection in post operative wound was found to be similar in both the groups.

DISCUSSION

Surgeons have been always been in search of an ideal method of making skin incision which would provide quick and adequate exposure with minimum loss of blood. Electrocautery has been widely used for hemostasis and less often for skin incisions. Earlier days when explosive anesthetic agents were in use , electro surgical instruments had limited use because of explosive risks associated with anesthetic agents. After the invention of nonexplosive anesthetic agents like halothane , electro surgical instruments like diathermy are increasingly being used for tissue dissection except for skin incision. This reluctance for use of electrocautery is attributed to the belief that electro surgical instruments cause devitalisation of tissue within the wound which consequently would lead to wound infection , delayed wound healing and wound scar formation. The fear of injury to tissues was first unfolded when this technique was used by Peterson in reconstructive and cosmetic faciomaxillary surgery , Mann and Klippel in paediatric surgery , Kamer in rhitidoplasty , Tabin in blephoroplasty , with minimum scarring and excellent results . Skin incisions in general surgery were reported by Dixon and Watkin in patients undergoing inguinal herniorrhaphy and cholecystectomy. As mentioned above various studies were undertaken to evaluate the efficacy of electrocautery over scalpel in making skin incision and results were varying as some showed better results with electrocautery and some showed similar results. In our study ,60 patients were randomized in to two groups , Incision was made either with scalpel or electrocautery depending on the group allotted , and were evaluated post operatively for pain , requirement of analgesics and post operative wound complications. This study showed no difference between the both the groups in post operative pain , analgesic requirement and wound complication.

CONCLUSION

Based on observations made in this study , it has been concluded that results of the both groups i.e electrocautery group and scalpel group are similar in relation to 1. Postoperative pain 2.

Requirement of analgesics 3. Postoperative wound complications.

SUMMARY

In our study “COMPARATIVE STUDY OF EFFICACY OF DIATHERMY INCISION VERSUS SCALPEL INCISION IN PATIENTS UNDERGOING LICHTENSTEIN HERNIOPLASTY” a total of 60 patients were randomized in to two groups ,group A (Electrocautery group) and Group B (Scalpel group), skin incision in patients undergoing inguinal hernia was made either with electrocautery or scalpel depending on their group. Post operative pain, analgesic dose requirements and postoperative wound complication were measured and results were analyzed using Mann Whitney U test and Chi square tests.

Both the groups had similar age groups. Post operative pain in both group were comparable in both the groups. Although hematoma was seen more in scalpel group , difference was not statistically significant. Post operative seroma and purulent collection were similar in both the groups. Although results were similar in both the groups still we recommend the use of electrocautery for skin incision , as it is an alternative , attractive and easily available new method. Traditional fear of wound strength and devitalisation were not reflected in this study. Most importantly recent increase in blood borne infections like hepatitis C , hepatitis B , human immune deficiency virus infection recommends exclusion of scalpel from operative field. On the basis of this study we recommend a wider use of electrocautery in all surgical procedures to make skin incision as this technique is quite safe.

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