

A comparative study of Diathermy Vs Scalpel skin incision in abdominal surgeries

Dr.S.Sujith Kumar.M.S., ¹Dr.R.Diana Grace .M.D., ²Dr.K. DhineshBabu.M.S.,
³Dr.M.Bhaskar.M.S., ⁴

¹Associate professor , Dept of General Surgery, Karpagavinayaga Institute of Medical Sciences &Research centre, Kanchipuram Dt , TamilNadu.

² Assistant professor , Dept of Paediatrics, Govtvellore medical college & Hospital, Vellore , TamilNadu.

³ Assistant professor ,Dept of General Surgery, Karpagavinayaga Institute of Medical Sciences &Research centre, Kanchipuram Dt , TamilNadu.

⁴ Professor &HOD ,Dept of General Surgery, Karpagavinayaga Institute of Medical Sciences &Research centre, Kanchipuram Dt , TamilNadu.

Abstract:

Objective: The aim of the study was to compare the Diathermy Vs Scalpel skin incision in abdominal surgeries.

Materials &Methods: A total of 140 patients were taken for this study . 72 patients underwent diathermy incision (Group A)who were compared with 68 scalpel incision patients (Group B). variables used in this study were incision time , incisional blood loss and postoperative pain .

Results : Diathermy skin incision are having less bleeding , less incision time and less postoperative pain when compared with scalpel incision.

Conclusion: Diathermy incisions are less harmful to the skin . It has got more advantages than scalpel incisions like less incision time, less incisional blood loss and less postoperative pain.

I. Introduction:

Surgical incisions are usually made with scalpel. Usage of scalpel, usually results in skin bleeding which obscure the operating field resulting in wastage of operating time . Other alternative in making surgical incision is diathermy. Diathermy is mainly used for tissue dissection, cutting and coagulation of tissues. Usually skin incision by diathermy is avoided due to fear of deep burn and scarring when compared with scalpel incision, which create a clean incised wound with minimal tissue destruction¹. But diathermy in skin incisions decreases bleeding with less incision time².

Maddenetal³ reported that there is a greater rate of infection with diathermy incision than with scalpel incision . Diathermy incision not a true cutting incision^{4,5}. Diathermy heat cell with in tissues so rapidly that they vaporize, leaving the cavity within cell matrix, heat created disappears as steam, rather than being transferred to adjacent tissue. As electrode is moved forward new cells are contracted and vaporized with creation of incision. This explains absence of scarring and subsequent healing with less scarring.

II. Materials and methods:

This was a prospective study conducted in karpagavinayaga medical sciences and research center during the period from November 2013 to January 2015. Totally, 140 patients were participated in this study. All patients undergoing elective abdominal surgeries like, hernia surgeries, appendicentomy, cholecystectomy and laparotomy were included . All emergency appendicentomy , cholecystectomy and laparotomy and complicated hernia surgeries were excluded.

The patients were randomised into two groups like diathermy (group A) or scalpel (group B). In diathermy group [Fig.1 & 2], skin incisions made out by electrosurgical unit. In our institute, we used ARC surgical diathermy D-400 with the setting (cutting- 50-60 and coagulation 35-45). In scalpel group, we used 22 sized blade for all skin incisions. Variables used in this study are incision time, incisional blood loss and postoperative pain .

Incision time was Calculated from the beginning of skin incision to opening of subcutaneous tissues and it measured in seconds. Incisional Blood loss was assessed by weight of gauzes, number of gauzes and soakage of gauzes. Postoperative pain was assessed by visual analogue scale .



Fig.1.Diathermy incision in hemioplasty

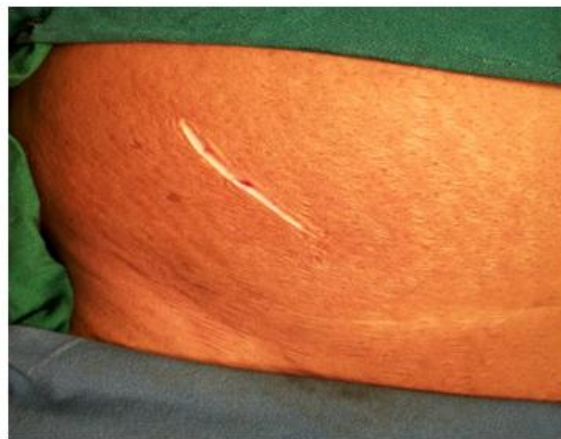


Fig.2.Diathermy incision in appendicectomy

III. Results :

Totally , 140 patients were involved in this study. There were 82 males (58.5%) and 58 females (41.5%).72 patients assigned to diathermy group of which 46 males(63.8%)and 26 females (36.2%). 68 patients assigned to scalpel group of which 32 males(47%)and 36 females (53%). The mean incision time in diathermy group was 6.54 ± 0.78 sec/cm² where as in scalpel group it was 8.92 ± 1.20 sec /cm² . The mean incisional blood loss in diathermy group was 1.20 ± 0.30 ml/cm² where as in scalpel group it was 1.78 ± 0.16 ml/cm² . As a whole diathermy group has less incision time ,less incisional blood loss compared with scalpel group.Similarly , postoperative pain also less in diathermy group which was assessed by visual analogue scale.

IV. Discussion:

Diathermy mainly used for tissue dissection particularly for hemostasis⁶ .Surgeons , generally avoid diathermy for making skin incisions due to certain reasons like wound infection , delayed wound healing and excessive scarring⁷ .Several clinical studies showed diathermy incision is better than scalpel incision in terms of time taken for incision , lesser pain , better wound healing and minimal blood loss⁸ . Our study showed that diathermy skin incision had more advantages than scalpel skin incision.

V. Conclusion:

This study concludes diathermy skin incisions in abdominal surgeries have more advantages over the scalpel skin incisions because of less incision time , less incisional blood loss and less postoperative pain.

References:

- [1]. JohnsonCD,Serpell JW(1990) Wound infections after abdominal incision with scalpel or diathermy . Br J Surg 77:626-627.
- [2]. Sebben JE . Electrosurgeryprinciples : cutting current and cutaneous surgery – part – I J dermatolsurgoncol . 1988: 14: 29- 31
- [3]. Madden JE , Edlich RF , Custer JR , Panek PH , Thul J , Wangenstein OH . Studies in the management of the contaminated wound.IV Resistance to infection of surgical wounds made by knife ,electrosurgery and laser . Am J Surg.1970: 119(3) :222:4
- [4]. Kumar V , Tewari M , Shukla HS . A comparative study of scalpel and surgical diathermy incision in elective operations of head and neck cancer. Indian J cancer 2011, 48 :216-9
- [5]. CuschieriA , Steele RJ . Surgical craft and technology .In :Cushieri A , Steele RJ , Moosa AR editors . Essential surgical practice vol1.4 theoxford : Butterworth – Heinemann 2000 ,37-68.
- [6]. Sivaj A, Farooq – Dar M , Gilani AB , Raziq S . Elective midline Laparatomy : Comparison of diathermy and scalpel incisions professional Med J .2011, 18(1):106-111
- [7]. SoballePW ,Nimbkar NV , Hayward I . Electric cautery lowers the contamination threshold for infection of laparotomies.Am J Surg 1998, 175 :263-6
- [8]. Shivagouda P , Gogeri BV Godhi AS , Metgud SC Prospective randomised control trial comparing the efficacy of diathermy incision versus scalpel incision over skin in patients undergoing inguinal hernia repair . Recent Research in science and technology. 2010,2 (8):44 -4.