A RANDOMISED COMPARATIVE STUDY OF DIATHERMY INCISIONS AND SCALPEL INCISIONS IN SUB ACUTE APPENDICITIS

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ABSTRACT

Introduction: Treating injuries with heat can increase blood flow and make connective tissue more flexible. It can also help minimize inflammation and reduce the incidence oedema, or fluid retention. By increasing blood flow to the site of an injury, the deep heat generated with diathermy can accelerate healing. Diathermy is used to treat arthritises, back pain, fibromyalgia, muscle spasms, neuralgia, sprains and strains, tenosynovitis, tendonitis, bursitis. In the second, as an adjunct to surgery, diathermy is used to coagulate, prevent excessive bleeding, and seal of traumatized tissues. It is particularly effective in eye surgery, neurosurgery & dermatology. However, there is still not a lot of evidence to prove that diathermy is the most effective treatment for these conditions. Aim Of The Study: Comparison of Diathermy incision and Scalpel incision in elective open appendectomy surgery. Materials And Methods: Sample size: 25 patients per group irrespective of sex. Study Group was subdivided into: Study Group A – Patients will be subjected to Diathermy incision. Study Group B – Patients will be subjected to Scalpel incision. After obtaining preanaesthetic check-up patients were posted for surgery. Data was collected using a proforma meeting the objectives of the study. Results: The treatment group were split into two, Twenty five cases used diathermy for skin incision and the other twenty five cases used traditional scalpel for skin incisions in open appendectomy procedures. 50 patients in the study groups were compared, 4 developed wound gaping which accounts for 8%. Wound gaping is considerably seen in scalpel incision with a highly significant P value of 0.0297 using Pearson-Chi square test. Hypertrophic scar is seen in scalpel incision with significant P value of 0.074 using Pearson-Chi square test. Keloid is considerably seen in scalpel incision with a highly significant P value of 0.0149 using Pearson-Chi square test. The pain in POD-1 was compared, the mean value is 7.44 and 6.16 in scalpel and diathermy respectively, with a high significant P value of <0.0001. The pain in POD-2 was compared, the mean value is 6.28 and 4.72 in scalpel and diathermy respectively, with a high significant P value of <0.0001. Conclusion: All the patients were followed everyday in post operative period till they were discharged. The following parameters were observed, that is comparison of the two procedures with relation to duration of incision, post operative pain, post operative complications in both the procedures. Diathermy is the first choice of incision for open appendectomy procedures as there is less chance of post operative wound complications.

Key Words: Diathermy, Hypertrophic Scar, Appendicitis, Reduced Pain Score

INTRODUCTION: In shortwave diathermy, the part to be treated is placed between two condenser plates and the highest temperature is concentrated in the subcutaneous tissues. It is usually prescribed as treatment for deep muscles and joints and is sometimes used to localize deep inflammatory disease such as bursitis, neuritis, osteoarthritis, rheumatoid arthritis. Absolute contraindications are haemorrhage, metal implants, infections, malignancy, pacemakers, phlebitis, pregnancy, wet dressings. Ultrasound Diathermy: It uses high-frequency acoustic vibrations; their heating effect increases circulation and metabolism and speeds up the rate of ion diffusion across cellular membranes. During treatment the apparatus is moved slowly across the surface of the area to be affected. Ultrasound is used to heat selected muscles that are too deep to be significantly affected by surface heating. Heat is generated by the vibration of the tissue. This promotes blood flow into the area. Microwave Diathermy: It uses microwaves to generate heat in the body. It can be used to evenly warm deep tissues without heating the skin. Since it can’t penetrate deep muscles, it is best suited for areas that are closer to the skin, such as the shoulders. It uses radiation of very high frequency & short wavelength similar to radar waves. All physiologic responses are due to its heating effect. Microwave
Diathermy is used in the management of superficial tumours with conventional RT & CT. Treating injuries with heat can increase blood flow and make connective tissue more flexible. It can also help minimize inflammation and reduce the incidence of oedema, or fluid retention. By increasing blood flow to the site of an injury, the deep heat generated with diathermy can accelerate healing. Diathermy is used to treat arthritis, back pain, fibromyalgia, muscle spasms, mystic, neuralgia, sprains and strains, tenosynovitis, tendonitis, bursitis. In the second, as an adjunct to surgery, diathermy is used to coagulate, prevent excessive bleeding, and seal off traumatized tissues. It is particularly effective in eye surgery, neurosurgery & dermatology. However, there is still not a lot of evidence to prove that diathermy is the most effective treatment for this condition.

MATERIALS AND METHODS: Ethical committee permission was obtained and the study was done in the department of general surgery in Vinayaka mission medical college, Karikal. Patients presenting to Vinayaka mission medical college and hospital, Karaikal who are posted for elective open appendectomy surgery. After obtaining informed and written consent in understandable language from patients are subjected to the study Type Of Study: A controlled Prospective Clinical Comparative study. Number Of Groups: Two Sample Size: 25 patients per group irrespective of sex. Study GROUP A – Patients will be subjected to Diathermy incision. Study group B – Patients will be subjected to Scalpel incision. After obtaining preanaesthetic check-up patients were posted for surgery. Data was collected using a preformed meeting the objectives of the study. Detailed history and necessary investigations were taken. Inclusion criteria: All patients undergoing surgery for sub acute appendicitis in the Department of General Surgery in VMMC, Karaikal. Incision made on non-tension area. Age 10 - 70 yrs. HbA1C < 7. Exclusion Criteria: Pregnant women, Emergency cases, Immunocompromised patients, Patients with pacemaker device, Unclear and untidy wounds, Lost to follow up.

RESULTS

GRAPH :1 GENDER DISTRIBUTION OF PATIENTS STUDIED:

Comparison of Gender for Type of Incision

The p value for the age distribution is 0.225 which is done using Pearson chi square test is not very significant.

GRAPH :2 TREATMENT DISTRIBUTIONS OF PATIENTS STUDIED:

TYPE OF INCISION

The treatment group were split into two, Twenty five cases used diathermy for skin incision and the other twenty five cases used traditional scalpel for skin incisions in open appendectomy procedures.
50 patients in the study groups were compared, 4 developed wound gaping which accounts for 8%.

50 patients in the study groups were compared, 3 developed hypertrophic scar which accounts for 6%.

50 patients in the study groups were compared, 2 developed keloid which accounts for 4%. 
The duration of incisions were compared, the mean value is 7.24 and 6.29 in scalpel and diathermy respectively, with a high significant P value of <0.0001.

**GRAPH :7 COMPARATIVE STUDIES IN PAIN SCALE FROM PATIENTS IN POD-1 AND POD-2:**

The pain in POD-1 was compared, the mean value is 7.44 and 6.16 in scalpel and diathermy respectively, with a high significant P value of <0.0001. The pain in POD-2 was compared, the mean value is 6.28 and 4.72 in scalpel and diathermy respectively, with a high significant P value of <0.0001.

**GRAPH :8 COMPARISON OF PAIN BETWEEN DAY1 AND DAY2 FOR DIATHERMY INCISION:**

According to the data collected and observed, 12 percent of the patients who had underwent scalpel incisions had developed post operative wound gaping which was very significant, only 4 percent in patients underwent diathermy incisions had wound gaping.
DISCUSSION

Incision will be the only part the patient sees after a surgery. The scars are the only cosmetic problem for the patient undergoing elective surgery. This study mainly concentrates on the superiority of diathermy incisions which has early post operative pain relief, lesser incision time, minimal scar and better cosmetic result. Many studies concentrated mainly on the post operative complications. In this study I have enlightened about the lesser incision time, early post operative pain relief and lesser complications in diathermy incisions in open appendectomy cases. Age distribution of the patients was studied and shown in table 1. Mean age from 7 to 70 years of age were selected randomly and included in this study. Gender distribution of the patient were equally distributed and shown in the table2 and also graphically. 32 percentages of the males were included and 68 percent of the male included in the study. Gender distribution was verified. In age distribution of the patient was calculated according to the gender. Up to the age of 10 years, total of 4 percentages of patients were included in this age group. From 11 to 20 age group, total of 22 percentage patients were included. From 21 to 30 age group, totally 26 percentages of patients were included in this age group. 31 to 40 age group, totally 26 percentage patients were included. 41 to 50 age group, totally 10 percentage patients were included. 51 to 70 age group, totally 12 percentage patients were included in this age group. According to the statistics, P value came as less than 0.001, which suggest statistically significant at age distributed according to the gender. Gender distribution was studied, among them 76 percentages of males and 24 percentages of females were subjected to scalpel incision whereas 60 percent of males and 40 percent of females were subjected to diathermy incision. The total time taken to complete the incision was compared between the treatment groups and observed that the mean value is 7.24 and standard deviation is 0.27 in scalpel group. Diathermy is found to be superior with mean value 6.9 and standard deviation is 0.24. Hence diathermy is easier and less time consuming than scalpel incision with p value of 0.0001 which is statistically highly significant. Pain scale according to visual analogy scale was studied comparing the treatment groups in post operative day 1 and 2 respectively and results are mentioned below. In post operative day 1, the standard deviation of scalpel and diathermy is 0.51 and 0.80 respectively whereas in post operative day 2, the standard deviation of scalpel and diathermy is 0.54 and 0.79. The p value is 0.0001 and is highly significant which also shows the early post operative pain relief is observed in diathermy incision than in scalpel incision. Three complications were taken into account and compared with the patients who underwent scalpel and diathermy incisions and had wound gaping at seventh post operative day, hypertrophic scar was observed only in scalpel incision, keloid was also noted only in scalpel incision. All data were included and calculated in the two tables and results are discussed. In seventh post operative day, wound gaping was observed in three patients which accounts to 12 percent who underwent scalpel incisions whereas in diathermy incisions only one patient had wound gaping which accounts only 4 percent as shown in table 13 and p value is observed to be 0.297, which is highly significant. Hypertrophic scars were observed in some of the patients and their results were tabulated. 12 percent of the patients who underwent scalpel incision developed hypertrophic scars. No single case developed hypertrophic scar that underwent diathermy incision so the study proves that diathermy incision is superior to scalpel in preventing post operative complications as shown in table 14. p value 0.074 which is statistically significant. Keloid was observed in 8 percentages of patients who underwent scalpel incision and none of them developed keloid in diathermy incision as shown in table 15. P value 0.149 which is statistically not very significant.

CONCLUSION : All the patients were followed everyday in post operative period till they were discharged. The following parameters were observed, that is comparison of the two procedures with relation to duration of incision, post operative pain, post operative complications in both the procedures. Diathermy is the first choice of incision for open appendectomy procedures as there is less chance of post operative wound complications. Post operative pain, duration of incision is comparatively less in diathermy incision when compared to scalpel incision. There by I conclude that, diathermy incisions are far better than traditional scalpel incisions owing to the various beneficial factors and in the future years of advancements in surgery to come.

REFERENCES


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