

Primary Closure of Abscesses Versus Conventional Incision and Drainage

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ABSTRACT

Objective: To determine reliability of primary closure of abscesses versus conventional incision and drainage. **Study Design:** Comparative study. **Settings:** DHQ Hospital, Independent University Hospital Faisalabad-Pakistan. **Duration:** Two years, 2017 to 2019. Conventional incision and drainage with wound packing is still being widely practiced despite innovative broad spectrum antibiotic coverage availability. The purposes of innovative primary closure procedure after incision and drainage and meticulous wound cleansing with normal saline covered by broad-spectrum prophylactic and post-operative antibiotics is to reduce morbidity and cost related to the more conventional procedure. **Methodology:** Comparison of two procedures that i.e. conventional incision and drainage with wound packing and incision and drainage with primary closure. The results were observed in patients including author's recent practice undergoing primary closure after incision and drainage from December 2017 to July 2019. The data was collected from DHQ Hospital, Independent University Hospital Faisalabad from year 2017 to 2019. Group 1 included patients with primary closure and group 2 included patients undergoing conventional incision and drainage. **Results:** Results of both procedures were compared in terms of morbidity i.e. recurrence, wound infection, cost and final scar results. In group 1 recurrence was observed in one patient (2%). It was observed that post-operative wound infection occurred in two patients (4%) that settled with antibiotic cover. Lesser number of average hospital stay which the author found to be just 0-1 day. The healing time was observed to be 7-10 days. In the group 2, there was no difference in recurrence of abscess which was found to be 2%-3%. The wound infection was observed 4% which was like group 1. On the other hand, the patients had to stay hospital for 4-5 days. Daily painful dressings requiring I.V analgesia and psychological trauma related to open wound. The average healing time was extended to 4-6 weeks. **Conclusion:** Primary closure of abscesses versus conventional incision and drainage is more beneficial

Keywords: Primary closure, Analgesia, Incision and drainage, Abscesses.

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INTRODUCTION

Incision and drainage of abscess is one of the most commonly practiced surgical procedures.¹ An abscess is defined as collection of pus which has been accumulated within a tissue due to some inflammatory process which may be reaction to either infections or other foreign entities like infected needles, bullet wounds or infected wooden materials.² It is part of the defensive reaction of the tissue in order to prevent the spread of infection to other parts of the body. The organism or foreign entities kill the local cells that results in the production of cytokines which generate inflammatory reaction and draw huge number of blood cells to area and increase regional blood flow.³ Clinically it can be described as a tender fluctuant soft tissue mass walled by firm granulation tissue and erythema.⁴

The conventional treatment of abscesses is incision, curettage, drainage and, in some cases, deroofing prior to allowing open drainage, with or without packing.⁵ This allows healing of the cavity from the base by secondary intention. In 1951, it was suggested that abscesses could be closed at the time of incision and drainage by primary suture.⁵

Abscesses may arise anywhere in the body and the nature of infective organisms varies with site of abscess formation. Subcutaneous abscess is typically poly-microbial in nature.⁶

Staphylococcus aureus and group A beta hemolytic streptococci are most commonly involved aerobic microorganisms. Commonly isolated anaerobes include *Bacteroides*, *Peptococci*, *Pepto-streptococci*, *clostridium sp.*, *lactobacillus sp.* and fusobacteria. *Staphylococcus aureus* is most commonly involved organism.⁷

For treating subcutaneous and soft tissue abscesses, one may choose percutaneous aspiration, incision and drainage without primary closure as well as incision and drainage with primary closure. Out of these former remains the preferred choice but it leaves an ugly scar, delay wound healing and dressings are painful.⁸ Breast infections are occasionally seen in neonates but most commonly affect women aged between 18 and 50 years and are categorized as lactational and non-lactational infections. The infection can affect the skin overlying the breast when it can be a primary event or, it may occur secondary to mastitis and/or, secondary to a lesion in the skin.⁹

Conventional surgical approaches rely on total excision of the sinus area followed by either primary closure or secondary intention wound closure.¹⁰ The first allows for a shorter wound healing time but also a higher rate of wound-related complications,¹¹ such as infection and suture dehiscence, and recurrence. Several techniques, including the use of

transpositional flaps, have been proposed in order to avoid such problems.¹² Reporting promising results such as a shorter wound healing and time off work and also improved pain control and cosmesis.¹³ However, the benefits of this method in comparison with conventional surgery are still under study.^{14,15}

METHODOLOGY

Study Design: Comparative study.

Group 1

Study period: Dec 2017 to July 2019

Sample size: 50 patients

Age limit: 12-50 years (male & females)

Treatment: Primary closure

Sample selection: The sample of 50 patients was selected at Independent University Hospital, DHQ Hospital Faisalabad.

Group 2

Study period: Dec 2017 to July 2019

Sample size: 50 patients

Age limit: 12-50 years (male & females)

Treatment: Conventional incision and drainage

Sample selection: DHQ Hospital Faisalabad, Independent University Hospital Faisalabad.

Inclusion criteria: Small breast abscesses about 20ml pus collection within breast tissue (lactational and non-lactational including granulomatous Abscess, super facial skin abscesses and infected sebaceous cysts were included in the study.

Exclusion criteria: Deep intramuscular abscesses, intraabdominal abscesses and huge breast abscess involving 50% of breast tissue were excluded.

Methodology: In first group drainage of pus was done, all loculi were broken. The cavity was washed with copious amount of normal saline and dead space was closed with vicryl 2/0 and skin was closed with prolene in some cases interrupted sutures were applied and in most especially the breast Abscesses subcutaneous cosmetic stitches were applied. Pre- operative antibiotic prophylaxis was given in both groups followed by postoperative broad-spectrum coverage. The patient was called on 3rd day for follow up and dressing. In the second group conventional I&D was done, loculi were broken, washed with normal saline and covered with prophylactic and post-operative broad-spectrum antibiotics, the wound was packed with iodine-soaked gauze. After 24 hours pack was removed and put on daily dressing.

RESULTS

Among 50 patients treated with primary closure only one patient there was recurrence (2%), 2 patients (4%) showed post-operative wound infection with no need to reopen the wound, 47 (94%) patients were reported to heal without complications. Stitches were removed on 10-14 days of surgery. Results of both procedures were compared in terms of morbidity i.e. recurrence, wound infection, cost and final scar results. In group 1 recurrence was observed in one patient (2%). It was observed that post-operative wound infection occurred in two patients (4%) that settled with antibiotic cover. There was no need to reopen the wound. The most important benefit of primary

closure lies in lesser number of average hospital stay which the author found to be just 0- 1 day. Most of the patients had day surgery being discharged after few hours of surgery. The patients were called for first follow up visit on second post-operative day. And wound was observed for recollection/discharge, redness and seroma formation. The healing time was observed to be 7-10 days, fewer dressings and reduced number of days off from work

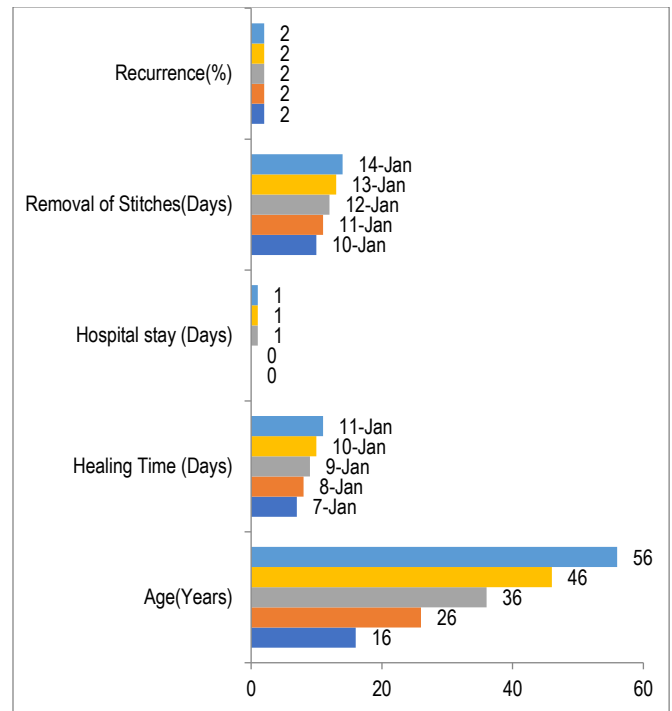


Figure 1: Primary closure of abscesses

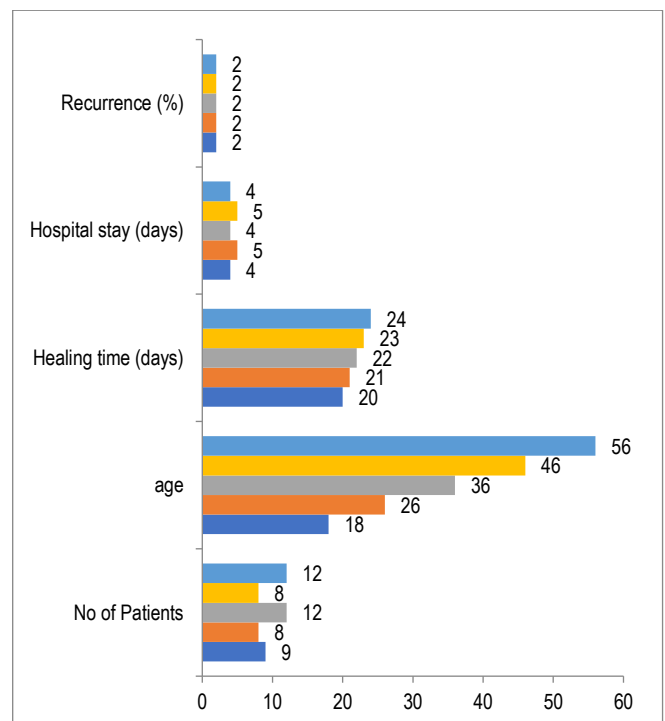


Figure 2: Incision and drainage

For treating subcutaneous and soft tissue abscesses, one may choose percutaneous aspiration, incision and drainage without primary closure as well as incision and drainage with primary closure. Out of these former remains the preferred choice but it leaves an ugly scar, delay wound healing and dressings are painful. Breast infections are occasionally seen in neonates but most commonly affect women aged between 18 and 50 years and are categorized as lactational and non-lactational infections. The infection can affect the skin overlying the breast when it can be a primary event or, it may occur secondary to mastitis and/or, secondary to a lesion in the skin. Among the patients treated with the second method there was no difference in recurrence (2%), and wound infection (4%), although the hospital stay was prolonged i.e. 4-5 days as were the number of painful dressings requiring IV analgesia, cost of treatment and increased healing time i.e. more than 28 days.

DISCUSSION

The above-mentioned procedures have been practiced by many people over many years, despite this the conventional procedure is still in wide practice. The study conducted by the author specifically explained the advantages of former on the latter. In current study it was observed that the patients who were treated with primary closure not only got their wounds heal earlier without any complications but also exhibited less days of hospital stay and lesser number of follow up visits. Average time for wound healing as was 6-7 days. Old age and diabetic patients showed increased healing time.^{18,19} Usual daily activities can be resumed as soon as the patient is out of anesthesia or in more sensitive patients by the third or, fourth day following incision and drainage as the wound begins to heal and pain diminishes. These results of author's study are quite significant as compared with Singh and Singh,¹⁰ where the wound healing time in incision and drainage with primary closure was 9.18 ± 0.941 days. The number of days of hospital stay were also less which were found average of 1 day. Singh and Singh reported more number of days of hospital stay with primary closure i.e. 4.0 ± 0.728 days. The patients with I&D not only showed greater healing time but also weeping wounds, greater number of painful dressings and more days of hospital stay as compared to conventional method of incision and drainage^{8,16,17} ($d16.66 \pm 1.944$ days) [p <0.05]. Mean hospital stay with convention method of incision and drainage was 7.12 ± 0.718 days. In short, their morbidity was extensively increased. Odaya S et al²⁰ reported similar study in which Patients were followed up to 2 months. The drain was removed in most of patients on 3rd -5 th day; otherwise further visits to hospital were required on 7th or 8th day.^{8,16,17} Patients who underwent incision and drainage were advised admission for daily dressings. Maximum patients discharged after 3 days of hospitalization.

CONCLUSION

From above study the author concluded that primary closure is the best method to treat various abscesses due to its low

morbidity and high patient satisfaction profile. Method of primary closure is more economical and comfortable as compared with conventional I&D because it reduces hospital stay required for expensive dressings and use of analgesic injections to control pain during dressing.

LIMITATIONS

Study was conducted on 50 patients and two setups; more sample size may change the results.

SUGGESTIONS / RECOMMENDATIONS

Surgeons to practice this less painful procedure as this is the era of less invasive surgery.

CONFLICT OF INTEREST / DISCLOSURE

There was no conflict of interest in this study.

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AUTHORSHIP CONTRIBUTION

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Nazim Hayat	References Layout
Sultan Mehmood	Data Collection, Proof Reading
Allah Rakha Hassan	Data Collection, Critical Review