Original Article

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Acute Abscess Management – Comparative Study between Primary Closures versus Healing by Secondary Intention

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Abstract

Introduction: Acute abscesses are one of the most common acute conditions in Surgical Department in Vinayaka Mission's Kirupanandha Variyar Medical College and Hospital (Salem, Tamil Nadu, India). Usually, the treatment is incision and drainage. The aim of this study was to compare the conventional method of incision and drainage with an alternative method of the incision, curettage with primary closure with closed suction drain.

Materials and Methods: A total of 60 patients admitted to the author's hospital were randomly divided into two groups: Closed group with 30 patients treated with incision, curettage, and primary closure with closed suction drain and open group with the conventional method of incision and drainage.

Results: Closed group patients had lesser time to heal, lesser duration of hospital stay, lesser number of dressing changes, lesser pain during dressing change, and better scar than the open group.

Conclusion: The method of incision, curettage, and primary closure with closed suction drain is more effective than conventional incision and drainage.

Key words: Abscess, closures, healing

INTRODUCTION

Acute abscesses are the most common cases in any Surgical Department. Father of Indian Surgery, Sushrutha[1] followed incision and drainage for such abscess which remains common method of treatment. This conventional method has disadvantages such as periodic painful dressing changes and delayed healing with prolonged hospitalization. This old method of treatment was first challenged by Ellis,[2] in 1951, who described primary closure of incised and drained abscess in 30 patients with an anorectal abscess. The majority of these patients healed uneventfully within 2 weeks with fewer complications. This study compared Sushrutha's method and modified Elli's method. The author modified Elli's method using closed suction drain and compared them.

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MATERIALS AND METHODS

Patients admitted in Vinayaka Mission's Kirupanandha Variyar Medical College and Hospital, Salem, Tamil Nadu, India, with abscess were included in this study. Patients, aged between 13 and 60 years, abscesses in back, trunk, breast, and extremities and size of 3-10 cm are included in the study. Patients with diabetes, abdominal abscess, immunocompromised states, cold abscess, and healing disorder were excluded. A total of 60 patients were selected. The study population was randomly divided into two groups, namely, closed and open groups. Both group patients received tetanus immunization and injection taxim (1G) was given for both groups at the time of procedures and every 12 h for 3 days. Antibiotics changed appropriately depending on the culture and sensitivity report thereafter.

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In both groups, the procedure was done under local or general anesthesia.

In closed group, abscess incised, pus drained, and wall of abscess cavity curetted until fresh bleeding occurs. A closed suction drain kept in cavity and incision closed with vertical mattress sutures and compression bandage applied. Negative pressure reapplied appropriately. Suction drain removed when the discharge was <2 ml. Follow-up visits were on 7th, 14th, and 30th postprocedure days.

In open group, incision and drainage of the abscess done and cavity packed with povidone iodine-soaked gauze. Dressing changed appropriately depending on the soakage.

Comparison was done based on wound healing time (number of days from the time of incision up to complete epithelialization in open group and up to skin suture removal in closed group), number of days of hospital stay (number of days from time of incision till discharge), need for frequent dressing change (assessed by discharge from the operated site), and pain during dressings (assessed by visual analog scale [VAS]), cosmetic of scar (assessed by VAS – hyperpigmented scar, keloid), and any complications, which included recurrence and wound gaping.

RESULTS

Wound Healing Time

Wound healing time in closed group was faster than in open group. Wound healing time was analyzed quantitatively within the group. The *P* value is statistically highly significant ($P < 0.001$).

Groups	Mean days (mean±SD)	*P* value
Closed group (*N*=30)	12.30±0.88	<0.001
Open group (*N*=30)	19.63±1.43	

SD: Standard deviation

Hospital Stay

Hospital stay was less in closed group than in open group.

Groups	Mean days of hospital stay (Mean±SD)	*P* value
Closed group (*N*=30)	11.01±1.87	<0.001
Open group (*N*=30)	18.24±2.67	

SD: Standard deviation

Number of Dressings

Number of dressings required was assessed by the discharge from the operated site. Number of dressing changes required in closed group was less than in open group as there was less discharge from the wound.

Days	% of cases with discharge, *N* (%)				*P* value
	Closed group (*N*=30)		Open group (*N*=30)		
	Presence	No discharge	Presence	No discharge	
1	30 (100.0)	-	30 (100.0)	-	
7	4 (13.3)	26 (86.7)	29 (96.7)	1 (3.3)	<0.001
14	-	30 (100)	-	30 (100)	

Pain Assessment

This mean VAS was analyzed quantitatively within both groups. There was a significant difference in both groups, which was statistically highly significant ($P < 0.001$).

Days	Groups		*P* value
	Mean VAS score (mean±SD)		
	Closed group (*N*=30)	Open group (*N*=30)	
1	05.33±0.80	05.73±0.91	0.076 (Not significant)
7	01.63±0.72	02.73±1.11	0.002 (Significant)
14	0.13±0.99	0.97±0.41	0.056 (Not Significant)

SD: Standard deviation, VAS: Visual analog scale

Scar Assessment

This mean VAS was analyzed quantitatively within both groups. There was significant difference both groups which was statistically highly significant ($P < 0.001$).

Scar	Number of cases (*N* (%))		*P* value
	Closed group (*N*=30)	Open group (*N*=30)	
Hyperpigmented scar	-	12 (40.0)	<0.001
Keloid	-	2 (6.7)	
Nil	30 (100)	16 (53.3)	

Complications

Complications were found three times more common in closed group than in open group. The complications in closed group were more (2 cases of recurrences and one case with wound gaping) as compared to open group (one case of recurrence).

DISCUSSION

A total of 60 patients were divided into two groups. The comparison was done in regards with wound healing time, hospital stay days, number of dressings required postoperatively, post-operative pain, scar, and complications. In our study, would healing time was significantly faster in closed group as compared with open group (<0.001). A study done by Dubey and Choudary[3] correlates with our study. In their study, they found that wound healing was faster in acute abscesses

treated with primary closure than conventional incision and drainage. In our study, mean number of days of hospitalization was significantly less in closed group as compared to open group. A similar finding was observed in a study conducted by Abraham *et al.*[4] In our study, number of dressings required was compared depending on the discharge from the operated site in both the groups. Patients in closed group required less number of dressings than the open group as there was less discharge from the wound from day 7. This finding was statistically significant too and also correlates with the study conducted by Singer *et al.*[5] In our study, post-operative pain and scar assessment were done by VAS. The difference in pain scores was statistically significant on day 7 in closed group indicating decreased intensity of pain than open group. Similar findings were correlated by a study conducted by Kale *et al.*[6] While comparing scars of both groups using VAS score; it was found that closed group patients had significantly better scars as compared to open group. This was comparable to study carried by Edino *et al.*[7] In our study, complications were 3 times more common in closed group as compared with open group. Similar findings with respect to recurrence of abscess were seen in a study conducted by Khanna *et al.*,[8,] but no such study with the complication of wound gaping was found in the literature.

CONCLUSION

Incision and drainage with primary closure and the negative suction drain were associated with faster healing, less post-operative pain, and need for less post-operative care, and better scar than the conventional incision and drainage. Primary closure with negative suction drain is a better option over the conventional method of incision and drainage for an acute abscess.

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