



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research
Vol. 12, Issue, 02, pp.10263-10266, February, 2020

DOI: <https://doi.org/10.24941/ijcr.38081.02.2020>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

RESEARCH ARTICLE

OPEN VERSUS CLOSED SURGICAL TREATMENT OF ABSCESS IN ACPM MEDICAL COLLEGE DHULE

Dr. Jagruti J. Gulati¹, Dr. Tushar B. Patil^{2,*} and Dr. Ashish Yadav³

¹Senior Resident, Department of General surgery, ACPM Medical College Dhule Maharashtra, India

²Associate Professor in Department of General surgery, ACPM Medical College Maharashtra, India

³Junior Resident, Department of General surgery, ACPM Medical College Dhule Maharashtra, India

ARTICLE INFO

Article History:

Received 24th November, 2019

Received in revised form

10th December, 2019

Accepted 09th January, 2020

Published online 28th February, 2020

Key Words:

Abscess,
Incision and Drainage,
Primary Closure.

ABSTRACT

Background: The aim of this study was to compare the conventional method of incision and drainage with an alternative method of the incision and drainage with primary closure with or without drain. **Materials and Methods:** A total of 140 patients admitted to our hospital were randomly divided into two groups Group A: -includes 50% patients of total sample size in study by conventional method of incision and drainage only. Group B: -includes 50% patients of total sample size in incision and drainage with primary closure with or without drain. **Results:** Closed group patients required less analgesia post-operatively, had lesser time to heal, lesser duration of hospital stay, lesser number of dressing changes, lesser pain during dressing change, better scar and not much rate of recurrences than the open group. **Conclusion:** Primary closure with or without negative suction drain can be a alternative technique over the conventional incision and drainage method of acute abscesses according to this study.

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Citation: Dr. Jagruti J. Gulati, Dr. Tushar B. Patil and Dr. Ashish Yadav. 2020. "Open versus closed surgical treatment of abscess in acpm medical college dhule", International Journal of Current Research, 12, (02), 10263-10266.

INTRODUCTION

The word abscess is very common in surgical practice Sushruta the Father of Indian Surgery had introduced incision and drainage of acute abscesses (Bhishagratna, 1916). This is widely used as conventional method in spite of having a number of disadvantages such as repeated painful dressing changes and delayed convalescence, causing lengthening of postoperative period. Ellis in 1951 introduced primary closure after incision and drainage of abscesses in 30 patients with anorectal abscesses of which majority of these patients healed uneventfully with few complication within 1 to 2 weeks (Ellis, 1951). Hence comparison of Open (incision and drainage only) and closed (incision and drainage with primary closure using a drain) method of treatment of superficial abscess was undertaken as need for standardizing the treatment and give it a broader perspective is must. Comparison of parameters like pain, duration of analgesia treatment, duration of wound healing, duration of discharge, appearance of scar, hospital stay and recurrence was done to study the efficacy and safety of the new modality of treatment.

MATERIALS AND METHODS

Patients visiting to JMF's Acpm medical hospital and satisfying the following inclusion & exclusion criteria were enrolled in the study after written consent from the patients or relatives with Simple Random Sampling

Inclusion Criteria

- All patients diagnosed with acute superficial abscesses over any region of the body.
- Patients in whom incision and drainage was indicated.

Exclusion Criteria

- Patients with deep abscess pelvic intra - abdominal intra-thoracic etc.
- Patients refusing any sort of treatment.
- Patient with co morbid condition like diabetes, tuberculosis, immuno-compromised.

Patients admitted to hospital with superficial abscess were randomly divided into 2 groups:-

*Corresponding author: Dr. Tushar B. Patil,

Associate Professor in Department of General surgery, ACPM Medical College Maharashtra, India.

- **Group A:** -includes 50% patients of total sample size in study by conventional method of incision and drainage only.
 - **Group B:** -includes 50% patients of total sample size in incision and drainage with primary closure with or without drain
- In the 'open' group, patients with abscess were treated with incision drainage, curetting, irrigation and packing only
 - In the 'closed' group, the abscess was drained through a linear or elliptical incision Vertical mattress sutures were taken keeping any type of drain in the cavity or without drain.
 - Sutures were removed between 7th-14th day after analysing the healing of suture line.
 - Post-operative pain was assessed using visual analogue score (VAS) on day 3, 7, 10, 21. Pain was labelled as mild (VAS 0-3), moderate (VAS 4-6) and severe (VAS 7-10)
 - The duration of hospital stay was calculated from day of admission till the day of discharge.
 - On follow up at 1 month recurrence was noted. It was defined as the development of further abscess; sinus or fistula after wound was healed over the same site.
 - Healing was assessed at Day 7, 10, 21, 30 days and wound was labelled as healed when it was dry with no gaping of the skin or surrounding cellulitis. Parameters in primary objectives will be studied in both groups.

The same data was used for the statistical analysis. Observations and results were tabulated with graphic representation as follows :-

RESULTS

Thus there was statistically very highly significant ($P < 0.05$) difference in in VAS between two modalities of treatment. Thus there was statistically very highly significant ($p < 0.05$) difference in complication of discharge on day 3,7,10 but on day 21 it was not statistically significant.

Table 1. VAS score

POD	Group	Mean	Std. Deviation	P value
3 days	I & D	5.94	0.91502	0.001 (S)
	Primary closure	3.81	1.08	
7 days	I & D	2.97	0.99	0.001 (S)
	Primary closure	1.48	0.84	
10 days	I & D	0.74	0.92	0.001 (S)
	Primary closure	0.05	0.23	
21 days	I & D	0.11	0.32	0.001 (S)
	Primary closure	0.05	0.37	

Thus there was statistically very highly significant ($p < 0.05$) difference in wound healing. Thus there was statistically very highly significant ($P < 0.05$) difference in duration of wound healing. Thus there was statistically very highly significant ($P < 0.05$) difference in external appearance of scar. Thus there was statistically not much significant ($P > 0.05$) difference in recurrence. There was statistically significant ($P < 0.05$) difference of mean duration of hospital stay. There was statistically significant ($P < 0.05$) difference of mean analgesic duration.

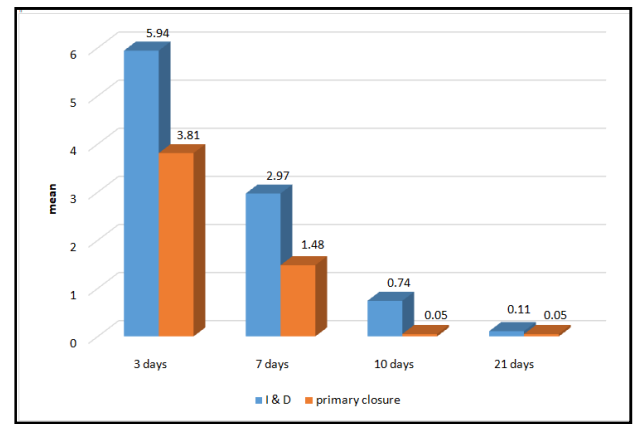


Table 2. Discharge on day 3,7,10 and 21.

		3 days	7 days	10 days	21 days
Groups	I & D	N 68 % 97.1%	N 51 % 72.9%	N 19 % 27.1%	N 4 % 5.7%
	primary closure	N 34 % 48.6%	N 21 % 30%	N 0 % 0	N 1 % 1.4%
Total		N 102 % 72.9%	N 72 % 51.4%	N 19 % 13.5%	N 5 % 3.6%
P value		0.001 (S)	0.001 (S)	0.001 (S)	0.17

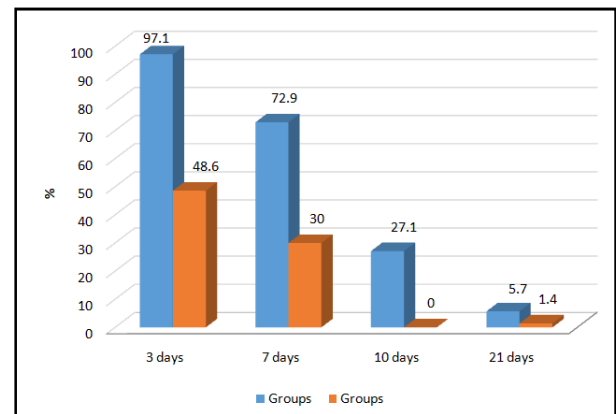


Table 3. Wound healing on 7,10 and 21 days

		7 days	10 days	21 days
Groups	I & D	N 2 % 2.9%	N 9 % 12.9%	N 62 % 88.6%
	primary closure	N 39 % 44.3%	N 65 % 92.9%	N 70 % 100%
Total		N 41 % 70.7%	N 74 % 52.9%	N 132 % 94.3%
P value		0.001 (S)	0.001 (S)	0.004 (S)

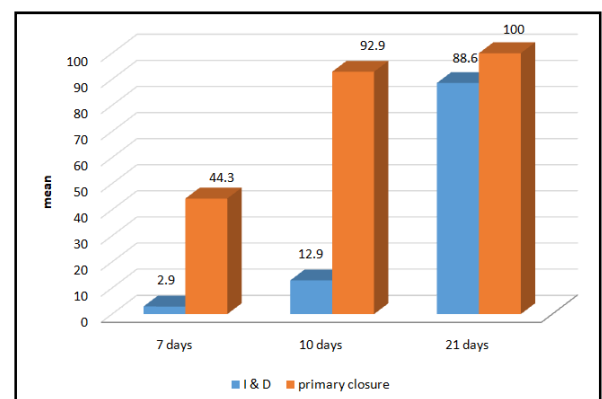


Table 41. Duration of wound healing

Group	N	Mean	Std. Deviation	P value
I & D	70	16.07	4.41	0.001 (S)
Primary closure	70	7.97	1.605	

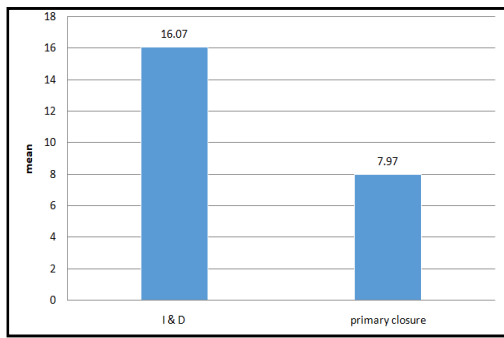


Table 5. External appearance of scar

Groups		Linear		Non linear		Total
		N	%	N	%	
I & D	N	21	30%	49	70%	70
	%		30%		70%	100.0%
primary closure	N	61	87.2%	9	12.9%	70
	%		87.2%		12.9%	100.0%
Total	N	82		58		140
	%		58.6%		41%	100.0%

P value= 0.001 (S)

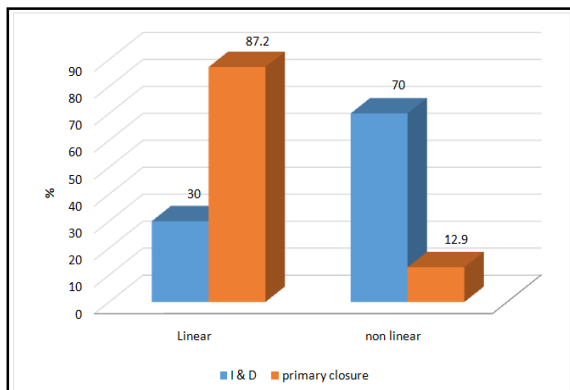


Table 6. Recurrence in 1month

Groups		Recurrence		Total
		N	Y	
I & D	N	63	7	70
	%	90.0%	10.0%	100.0%
Primary closure	N	67	3	70
	%	95.7%	4.3%	100.0%
Total	N	130	10	140
	%	92.9%	7.1%	100.0%

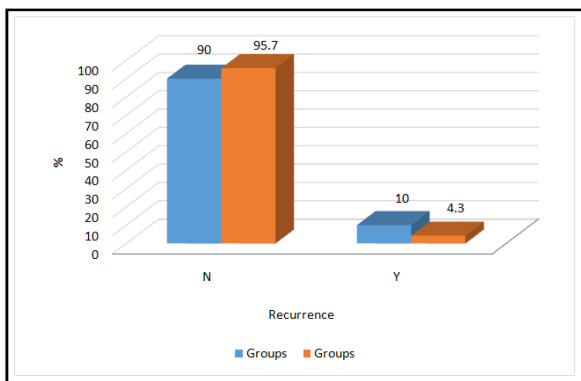
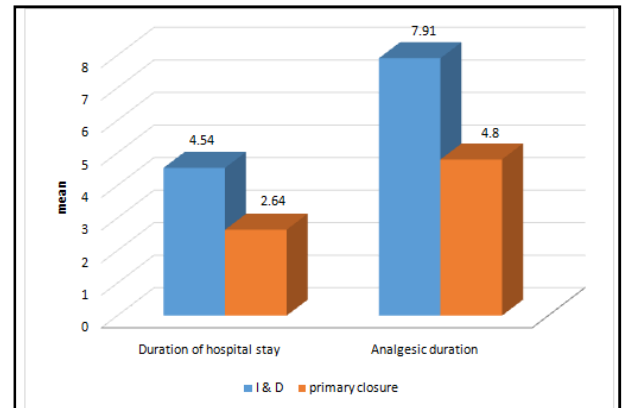


Table 8. Duration of hospital stay

group	Mean	Std. Deviation	P value
Duration of hospital stay I & D	4.54	2.79	0.001 (S)
primary closure	2.64	1.51	

Table 9. Analgesic duration

Group	Mean	Std. Deviation	P value
Analgesic duration I & D	7.91	3.24	0.002 (S)
primary closure	4.8	1.58	



Study	I & D	Primary closure
Abraham et al. [1997]	Hospital stay- 1 to 9 days	Hospital stay- 1 to 8 days
Vishal Dubey, et al. [2013]	Hospital stay- 1-2 days	Hospital stay- 1-2 days
Aniruddha Kale, et al. [2014]	Hospital stay (mean)- 17.46±2.57 days	Hospital stay (mean)- 11.98±1.82 days
M R Madan, et al. [2016]	Hospital Stay 18.24±2.67 days	Hospital Stay 11.01±1.87 days
Amandeep Singh, et al. [2017]	Hospital stay 7.12±0.718 days	Hospital stay 4.0±0.728 days
Arun Dhankhar, et al. [2017]	Hospital Stay 18.24 ± 2.67 days	Hospital Stay 11.01 ± 1.87 days
Dr Mirza Faraz Beg, et al. [2019]	Hospital stay 15.28±2.23	Hospital stay 9.740±1.724 days

DISCUSSION

The complication of pain was calculated according to VAS Score in our study and pain during dressing was less in closed group than open group. There was significant reduction in VAS score and pain in primary closure as wound healing was faster than in open group where regular and each dressing change caused pain till the wound healing due to de sloughing of the raw area. Similar results was found in study of Madan *et al.* (2016), Arun Dhankhar *et al.* (2017), Amandeep *et al.* (2017) and Dr Mirza Faraz Beg *et al.* (2019). Wound healing was faster in primary closure than in conventional method of treatment. These observations are similar to the original study of Ellis 196, study of Aniruddha Kale *et al.* (2017) Madan *et al.* (2016) Amandeep *et al.* (2017) and Arun Dhankhar *et al.* (2017) who found healing time less in primary closure than conventional method. The overall appearance of external scar was linear in majority of the cases of primary closure as healing was by primary intention and was not the case in conventional method as healing took place by secondary intention. These observations are similar to the study of Edino *et al.*⁽¹⁰⁾, Arun Dhankhar *et al.* (2017) and Madan *et al.*⁽⁵⁾. In all studies a bad scar, hypertrophied scar formation or keloid is seen in open group and good healthy linear scar is found in closed group unless there was recurrence observed. Dose and duration of analgesia required was less in closed group compared with open group in post-operative period. Duration of hospital stay in patients in open group was less 4.54 days with 2.79 days and in closed group was 2.64 days.

These observations are similar to the study of Aniruddha Kale (2014) *et al.*, Amandeep *et al.* (2017) but lesser than Madan *et al.* (2016). In primary closure there was no recurrence in 95.7% of the patient while 4.3% had recurrence. These observations are similar to the study of Aniruddha Kale *et al.* (2014), Amandeep *et al.* (2017) and Adam J. Singer, *et al.* (2013) found 11.1 % recurrence in I & D and 7.6% recurrence in primary closure, Leaper *et al.* (1976) found 23% recurrence in I & D and 8 % recurrence in primary closure, Visvanathan (1988) found 5 recurrence in I & D 0 recurrence in primary closure. Arun Dhankar *et al.* (2017) found recurrence more in primary closure than conventional method. However Simms *et al.* (1985) did not found much significant difference between recurrence rate of the two modalities of treatment.

Conclusion

Thus Incision and drainage with primary closure technique is associated with a faster wound healing with a cosmetically better scar, less post-operative pain thus needing lesser duration of treatment with analgesics, less hospital stay and not much recurrence. Primary closure with or without drain can be an alternative technique over the conventional incision and drainage of acute abscesses according to this study.

Compliance with Ethical Standards

Conflict of interest: None.

Informed Consent: Informed consent taken and ethical committee clearance obtained

Funding: none

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