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RESEARCH ARTICLE

"A PROSPECTIVE STUDY OF LOOP DRAINAGE OF SUBCUTANEOUS ABSCESS- A NEW GOLD STANDARD?"

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Abstract

Abscess is a common ailment presenting to the Surgical OPD and Emergency on a daily basis. Conventionally, incision and drainage(ID) by making an incision in the most fluctuant part and later packing the cavity with a wick has been practised[(1)]. We postulate a newer method of loop drainage(LD) of the cavity should be the new Gold Standard. This study aims to compare clinical outcome on conventional incision and drainage versus loop drainage of subcutaneous abscess. Study design was a prospective, observational study. Study was conducted in Silchar Medical College, from 23/12/2022 - 23/06/2023 , with a total of 120 patients. Of the 120 patients followed up, 48 underwent ID and 72 underwent LD. LD patients had a better pain profile post operatively on FLACC and Likert scales ($\underline{X}$-7.62 D1, 5.46 D3, 4.05 D5), lower treatment failure rate($\underline{X}$-10.8%), more favourable scar formation(POSAS patient and observer $\underline{X}$-17.52, $\underline{X}$- 10.30). Latex loops had better scores than PVC loops(POSAS $\underline{X}$- 15.30, $\underline{X}$- 9.45 vs $\underline{X}$-18.34, $\underline{X}$- 12.45). Loop drainage of abscess, especially with Latex Loops have lower failure rates, better compliance and better clinical outcomes. Especially in paediatric patients where ID is more difficult and cumbersome and loss to follow up more common, LD should no doubt be considered the new Gold Standard in surgical practice.

Introduction:-

Abscesses are fluctuant, localised collections of purulent material and fluid, limited to a cavity lined by a granulation membrane in the acute stage. They are a byproduct of the body's inflammatory process that proceeds following bacterial invasion. They are one of the most common ailments presenting to a surgical OPD or sometimes, to the Emergency Room as well.[(2)]

The incidence for skin abscesses remains at a significant 24.6 per 1000 population[(3)]. Immediate drainage of the abscess cavity has been the mainstay of treatment for this ailment, for over a millenia. In recent times, percutaneous drainage of deeper abscesses with catheters has presented as the treatment of choice. While incision and drainage of the subcutaneous abscess, with wick packing of the cavity has been the practice in surgical practices worldwide.

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Wick packing serves two purposes- it keeps the cavity patent and it helps maintain hemostasis in the cavity. The packing is usually temporary but requires removal and reinsertion at regular intervals. Many a time, a corrugated sheet drain is also used to drain the cavity and is removed after satisfactory drainage has been achieved[4].

In recent times, however, an alternative practice of Loop Drainage has been proposed across multiple centres. The process has been touted to be less painful and has higher compliance, especially in the young[5].

Our study aims to compare the two methods of drainage, in hopes of finding an answer to the question of whether to continue the age-old conventional technique of wick packing following incision and drainage, or to switch over to a new technique of Loop drainage for possibly better clinical outcomes.

Aims And Objectives:-

1. To compare the clinical outcomes following loop drainage of subcutaneous abscess versus conventional incision and drainage with wick packing.
2. To compare the clinical outcome of Latex Glove String Loop vs PVC loop drainage of subcutaneous abscesses.

Materials And Methods:-

Study setting-

Study was conducted in Silchar Medical College, Ghungoor, Assam. The data was recorded from patients presenting to the surgery department , either in the OPD or on an emergency basis. The college serves as a major tertiary care centre for people from the 'Barak Valley' region of the State of Assam as well as the neighbouring states of Tripura, Manipur and Meghalaya. The data was recorded for a duration of 6 months , from 23/12/22 to 23/06/23.

Study Design-

This was a prospective, observational, analytical study. Institutional ethical clearance and Informed Consent from the patients were both obtained for the study. The sample size was selected as 120 using standard statistical formulas with an online calculator.[6]

Methodology:-

All patients included in the study were offered options of Incision and drainage as well as loop drainage. No decision regarding the route of intervention was made by the researchers. Pain during and following drainage was recorded on Likert scales(0-10 range) for adults and FLACC(Face, Legs, Activity, Cry, Consolability) scales for paediatric patients[7][8]. Treatment outcome was measured in terms of treatment failure- defined as failure to show a decreasing trend in TLC over 5 days and scar perception following surgery, recorded using a POSAS scale(Patient and Observer Scar Assessment Scale)[9]. Loop drainage was done with both Latex string loops made from Sterile Gloves as well as PVC loops made from sterile IV line tubings. POSAS, FLACC, LIKERT and clinical outcomes were all measured and compared for the two different modes of Loop drainage.

The method of Conventional Incision and drainage involved making an incision across the wall of the abscess cavity , followed by irrigation and drainage of cavity, and wick packing with iodine soaked wick or insertion of a corrugated PVC sheet drain.

For Loop drainage, two sub 5 mm incisions were made on the farthest ends of the abscess cavity and all loculations broken with a pair of Kelly's artery forceps, and the cavity was irrigated with Normal Saline. Glove Latex loop or PVC IV tubing loop was inserted and pulled through the incisions. A simple gauze dressing sufficed along with an advice to move the loop through the space at periodic intervals[10].

Inclusion criteria-

1. Patients presenting with clinical subcutaneous abscesses to the Surgery OPD or Emergency Room.
2. Patients diagnosed as patients of subcutaneous abscess on USG of soft tissue swelling.

Exclusion criteria-

1. Patients diagnosed as cases of Tuberculosis or presenting with cold abscesses.
2. Patients with latex or PVC allergy.
3. Patients with abscesses in the perianal region.

4. Patients who refused surgical intervention.

Results:-

Of the 120 patients enrolled in the study, 71(59.16%) were male and 49(40.83%) were female. 34(28.33%) were in the (0-12) year old age group, 30(25%) were in the (12-30) year old age group, 20(16.66%) were in the (30-45) year old age group, 23(19.16%) were in the (45-60) year old age group, 13(10.80%) were in the greater than 60 year old age group.

A total of 72 patients(60.00%) underwent Loop Drainage and 48(40.00%) underwent Incision and Drainage.

Age Group(in years)	Number(percentage)
0-12	34(28.33%)
12-30	30(25%)
30-45	20(16.66%)
45-60	23(19.16%)
>60	13(10/80%)
Sex	Number(percentage)
Male	71(40.83%)
Female	49(59.16%)

Procedure	Number(%)
I&D	48(40.00%)
Loop Drain	72(60.00%)

Fig :- Loop drainage with a Latex glove loop in a subcutaneous abscess of the arm.

Of the patients that underwent Incision and Drainage, treatment failure was seen in 5 patients(10.41%) and 3 patients showed the same in the Loop drainage group(4.16%). Pain scale values were recorded to a mean of 3.69 and 4.24 for

Likert and FLACC scales for the group that underwent conventional Incision and Drainage with wick packing and a mean of 3.34 and 3.40 on the Likert and FLACC scales for the group that underwent Loop drainage of their abscesses.

Tested Group	Treatment failure (%)
I&D	5(10.41)
Loop Drainage	3(4.16)

Pain scale for I&D	Overall Mean ($\underline{X}$)	Day 1 Mean	Day 2 Mean	Day 3 Mean
Likert	3.69	5.15	3.12	2.80
FLACC	4.24	6.11	3.50	3.12

Pain scale for Loop drainage	Overall Mean($\underline{X}$)	Day 1 Mean	Day 2 Mean	Day 3 Mean
Likert	3.34	5.01	2.87	2.15
FLACC	3.40	5.85	2.55	1.80

Fig:- Minimal Scar formation following Loop drainage of Abscess.

Type of procedure	POSAS mean ($\underline{X}$) (Patient, Observer)
Incision and Drainage and wick packing	20.30 , 15.25
Loop Drainage	17.52 , 10.30

Type of Loop material	POSAS mean ($\underline{X}$) (Patient, Observer)
Latex Glove ring	15.30, 9.45
PVC	18.34, 12.45

POSAS score means on the patient and observer scales were both better for Loop Drainage (17.52 ,10.30) than Incision and Drainage (20.30, 15.25). Of the Loop Drainage group, Latex Glove loops had a better rating than PVC loops on the patient and observer scales (15.30,9.45 vs 18.34,12.45).

Conclusion:-

Loop Drainage of subcutaneous abscesses is a promising modification of the age-old Incision and Drainage technique with wick insertion, offering better clinical outcomes in terms of pain profile and scar perception in patients and doctors post operatively. The procedure was also associated with lower treatment failure rates. Of the two different materials used to make the loop, Latex Glove loops are both cheaper and more convenient than PVC loops, while also offering better scar perception. It is possible to recommend Loop drainage as a standard and effective procedure in the surgical OPD and ER, especially with respect to children.

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