

Incision and Drainage: Procedure Commonly Done, Less Discussed, Least Analyzed

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How to cite this article: Anmol Sambare, Shehtaj Khan, Prabuddh Godre, Dharmendra, Krishnanand. Incision and drainage: procedure commonly done, less discussed, least analyzed. *International Journal of Contemporary Medicine Surgery and Radiology*. 2022;7(2):B8-B11.

A B S T R A C T

Introduction: Abscess incision and drainage (I&D) operations form the bulk of surgical procedures in the emergency department (ED). Nevertheless, epidemiologic, clinical data are lacking for patients with abscesses presenting at a single tertiary centre – L.N.M.C and J.K. hospital. Aim and Objective: To record the demographic data of patients undergoing incision and drainage in terms of age distribution, sex distribution, site.

Material and methods: One hundred and sixty-eight patients were evaluated retrospectively at L.N.M.C and J.K. Hospital, Kolar Road, Bhopal who underwent incision and drainage on OPD basis in the duration of 2 years. Details on age, sex of patient, site of the abscess were recorded.

Results: Out of 168 patients undergoing I & D, majority of the patients 43(25.59%) had age between 20-29 years, 102(60.71%) were males. Abscess were seen predominantly on right side (57.14%), and mostly in upper extremity followed by lower extremity. The most common culture growth was of Staphylococcus aureus. Surgery procedure: All patients who presented with soft tissue (superficial) abscesses to surgery department in L.N.M.C and J.K. hospital underwent standard incision and drainage followed by broad spectrum antibiotic coverage and pus sent for culture and sensitivity, were evaluated between the august 2019– July 2020.

Conclusion: Abscess incidence is more commonly seen in young males predominantly seen in right side and extremities. Efforts need to be made at reducing the rates of SSI's by improving hygiene and health education.

Keywords: Demographic Study, Abscess, Incision and Drainage.

INTRODUCTION

With nearly 2.7 million visits (2.3%) to the emergency department (ED) in 2005 because of cellulitis and abscesses, the National Centre for Health Statistics report of 2007, states skin infections as the seventh most common reason for ED visits.¹

The skin flora enters the body due to surface injury or disruption by wetness and maceration, and sometimes cause serious infections. Superficial abscesses may develop following a minor trauma which usually passes unnoticed as it provides the predisposing injury.² As manual workers and housewives, because of their nature of work, frequently suffer from small abrasions or pricks, hand involvement is most commonly documented in them.³

Sometimes no obvious cause or lack of predisposing factors can be noted among patients presenting with superficial abscesses.^{2,4} In a series of 391 children with soft tissue infection, clearly predisposing factors were identified in only 38.4% of the cases. The infections were mainly due to trauma or adjacent skin sepsis.⁴ Major risk factors for superficial

abscesses include malnutrition, obesity and metabolic diseases such as diabetes, uraemia and jaundice. These host factors increase the risk of sepsis and abscess formation postoperatively, even after minor operations, but their link with community-acquired superficial abscesses is still not clear.^{5,6}

Furthermore, there are inconsistencies between classifications of skin and skin structure infections issued by the US Food and Drug Administration (FDA) and the Infectious Diseases Society of America (IDSA), which have contributed to confusion in terminology.^{7,8} For the purposes of clinical trial design, the US FDA groups cellulitis/erysipelas, wound infections and abscesses together as acute bacterial skin and skin structure infections (ABSSSIs). The clinical practice guideline (CPG) issued by the IDSA, advises clinicians to consider the management of skin and soft tissue infections (SSTIs) as either 'purulent' (associated with purulent drainage, discharge or exudate) or 'non-purulent' (not associated with purulent drainage, discharge or exudate).⁹

The recommended treatment for abscess management is

Incision and drainage (I&D) which involves incision, manual expression of the purulent content, elimination of loculations, irrigation, and drain placement or sterile packing.¹⁰⁻¹² This may or may not be followed by broad spectrum antibiotics.

MATERIAL AND METHODS

It was a retrospective observational study, conducted at Department of Surgery, J.K. Hospital associated with L.N. Medical College Bhopal (M.P.) for a period of 1 year, from August 2019 to July 2020. Data was collected in a tabulated form, of patients who underwent incision and drainage on OPD basis. Details of patients – age, sex, site were recorded and analyzed.

The diagnosis of abscess was made on clinical grounds. Abscess was drained under local anaesthesia following a wide incision, manual expression of purulent content, elimination of loculations, irrigation followed by broad spectrum oral antibiotics, analgesics and daily dressing. The drained pus was sent for culture and sensitivity in each case and after obtaining the culture and sensitivity report specific antibiotics were started.

RESULTS

In the present study, a total of one hundred sixty-eight

patients were included. There were in total 102 male (60.71%) and 66 female (39.29%) in this study. Age ranged from 7 year to 87 years with mean age of 38 years SD \pm 17.41.

Children accounted for 13.09% of series, while majority of patients were in the age group of 20 – 29 years i.e. 25.60% (n = 43). Two third of the patients (65.5%) were below the age of 50 years. There was substantial decrease in number of patients with increasing age as seen in figure.

Majority of the abscess occurred in right side of body accounting for 57% as compared to left side of body (43%)

Most abscess were on the upper extremity (40.47%), followed by lower limbs (32.14%), groin and buttock (19.64%) and others (trunk- 3.57%, back- 2.38%, face & neck- 1.78%). Majority occurred in the distal most part, like in upper extremity out of total 68 patients, 54 (79.4%) were having abscess either in the fingers or hand region. Similar, results were seen in lower extremity where 39 out of 54 patients (72.2%) were present in foot and lower one third of leg.

The most common culture seen was of Staphylococcus aureus seen in 26.19% of patients. Out of total positive culture reports gram negative bacterial growth was seen in 54.55% and gram-positive growth was seen in 45.45% of patients.

| Growth | Number | Percentage |
|---|--------|------------|
| Pseudomonas aeruginosa | 25 | 14.88% |
| Methicillin resistant staphylococcus aureus | 23 | 13.69% |
| Klebsiella species | 22 | 13.10% |
| Methicillin sensitive staphylococcus aureus | 21 | 12.50% |
| Enterococcus faecalis | 20 | 11.90% |
| Escherichia coli | 18 | 10.71% |
| Acinetobacter species | 11 | 6.55% |
| Citrobacter | 1 | 0.60% |
| Proteus vulgaris | 1 | 0.60% |
| Staphylococcus epidermidis | 1 | 0.60% |
| No growth | 25 | 14.88% |
| Total | 168 | 100% |

Table-1: Showing culture and sensitivity

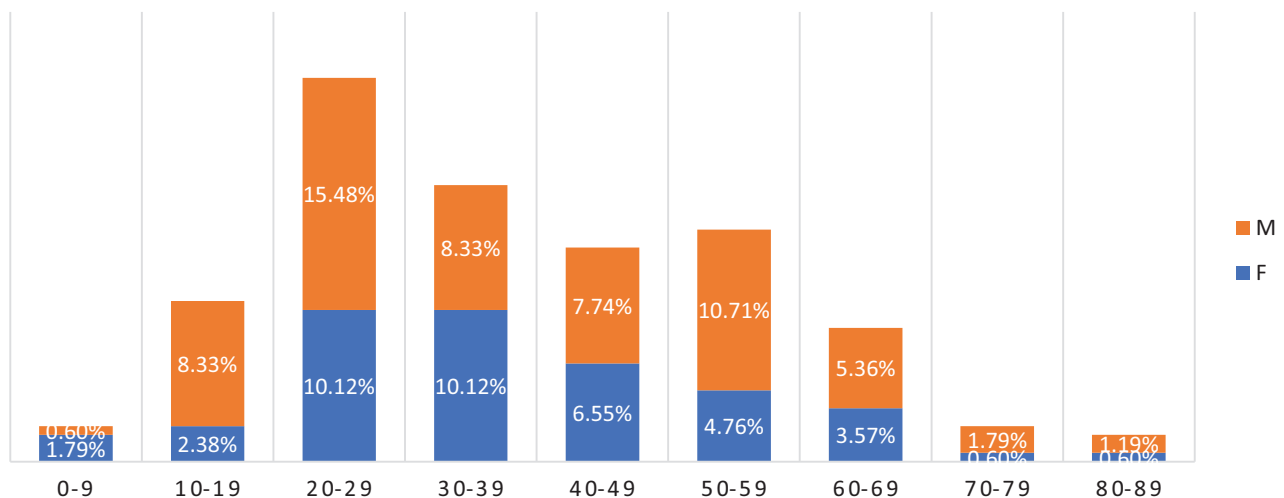


Figure-1: Showing AGE and SEX distribution among patients who underwent I & D

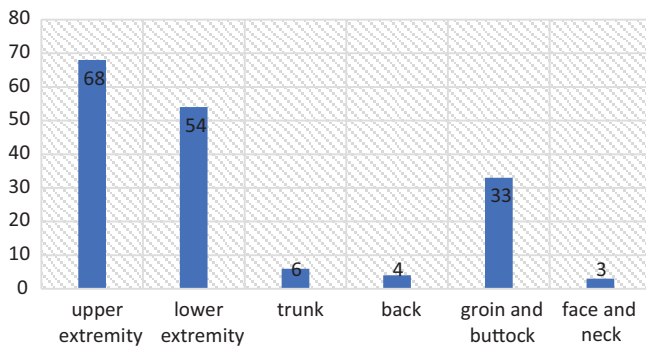


Figure-2: Showing SITE distribution among patients who underwent I & D

DISCUSSION

The bulk of patients with superficial abscess presenting to surgical casualty department in our hospital was the trigger of this study. Several risk factors for the development of skin and subcutaneous abscess have been described, in literature—trauma, diabetes, immuno-compromised state, malnutrition, anemia, previous skin lesions, etc.¹³ However many abscess occur without any identifiable risk factors.¹⁴

Our study remains consistent with majority of studies as males account for to be 60% and females 40% (sex ratio 1.49:1) of patients.^{9,15} However, it contradicts study of Nalmas et al where female constituted 55% of total patient evaluated.¹⁶ In India, working class group constitutes more males (68.4%) as per 2001 census, hence reflects in our findings.¹⁷

In our study mean age was 38 SD 17.41 years (range: 7 to 87 years) which is same as Nalmas et al for outpatient i.e. 38 (range: 18 – 71 years), although in the same study while considering inpatient as well as outpatient the mean age was 42 years (range: 18 – 80 years).¹⁶ This means that older age patients, when present with abscess require admission more frequently than young patients, possibly due to comorbidities.

B.R. Taira et al study, conducted at New York where National hospital ambulatory medical care survey was analyzed from 1996 to 2005. A total number of 3.28 million patients with diagnosis of abscess were assessed. Maximum number of patients were in the age group of 25 – 44 years.¹⁸ Similar result were seen in our study, as well as other studies with majority proportion of 25.60% patients present in age group 20-29 years and two third 65.5% patients below the age of 50 years.^{9,15} Slight discrepancy is seen as major proportion of Indian working class is constituted by manual labourers, who retire early.¹⁹ Henceforth, explaining the majority being in the age group of below 50 years and decreasing trend with increasing age. Epidemiological studies have identified populations at risk as being younger, healthy patients, those living in close quarters, and those having direct contact with an infected person.²⁰⁻²²

In our study, Skin and subcutaneous infections occurred more commonly on right side (57.14%). This can be explained by the fact that dominant hand would have higher tendency of

getting minor trauma and studies suggest that approximately 90% humans are right-handed.²³

We also studied the site of abscess. In our study, site wise distribution suggested maximum number in upper extremity (40.47%), followed by lower extremity (32.14%), groin and buttock (19.64%), trunk (3.57%), back (2.38%) and face and neck (1.78%) which remains consistent with other studies.^{9,15,18} The higher percentage of upper and lower extremities is similar to above mentioned studies, but groin and buttock region show higher percentage when compared to these studies because of poor sanitary conditions like - defecation in open, use of dirty clothes while menstruation and hesitation to seek medical attention for diseases in perianal region thus were seen more in females.

The pus report culture in our study showed commonest growth of *Staphylococcus aureus* (26.19%) with, methicillin sensitive as 12.5% and methicillin resistant as 13.69%, followed by *Pseudomonas aeruginosa*, *Klebsiella* species, *Enterococcus faecalis* and *E. coli*, which is similar to other studies.^{15,16}

Health education, particularly regarding hand washing with soap and water after work, play and household activities, improving standard of living, building lavatories, may reduce hand and perianal contamination and hence decrease the likelihood of acquiring an abscess.

It is to be stressed that the definitive treatment of an abscess is I&D. Antibiotics should not be given to patients with a formed abscess, as they will not help as well and can create an “antibioma.” Antibiotics can be used during the early cellulitis or inflammatory phase, to tip the balance in favour of body defences and abort the formation of an abscess. This is particularly helpful in persons with diabetes mellitus and immunocompromised patients. The value of antibiotics after I&D of an abscess is controversial. Some randomized studies indicate that it may reduce the likelihood of recurrence or formation of another abscess.²⁴ Delay in surgical drainage is known to result in spread of infection and systemic manifestations.^{25,26}

Limitations

It is retrospective study, hence potential of information bias. Ours is a single-centre study and number of patients are limited.

CONCLUSION

Data about skin infections is scarce in Indian literature. Our study though showing same results as established literature reconfirms that, young males are the most common visitors of ED presenting with abscess of extremities, predominantly right hand. The commonest organism in culture is *Staph. Aureus* as expected. But this study is an eye opener, since despite having all the data, we still stand in the same place, with no effort seen at reducing the rates of SSI's in Indian population. Measures to improve hygiene- personal as well as environmental, health education could possibly reduce the incidence of superficial abscess among people of tropics.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 10-03-2022; **Accepted:** 28-04-2022; **Published online:** 17-05-2022