International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Safe IM Injection Practices to Prevent Gluteal Abscess

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Abstract: ***Introduction:*** ***Intramuscular injection is a common mode of drug administration. Gluteus maximus being the most superficial and largest muscle of buttock is the most common site for IM injection. Hence is prone to abscess formation following IM injection. Etiology behind is the late diagnosis, unsterile practices and improper technique.*** ***Method****: A retrospective study conducted over a period of 18 months (Dec 2023-Jun 2025) on patients admitted with complaints of fever, pain and swelling on dorsogluteal region following intramuscular injection.* ***Results****: Gluteal abscess incidence is 0.4 - 19%. A total of 34 patients were admitted with complaints of fever, pain and swelling in the gluteal region following intramuscular injection, 28 managed conservatively but 6 progressed to abscess formation and surgical intervention had to be done.* ***Conclusion****: The study has concluded that patients with complaints of fever, pain and swelling following intramuscular injection need to be closely observed and treated else there are high chances of development of abscess requiring surgical intervention.*

Keywords: gluteal abscess, observed, conservatively, surgical intervention

1. Introduction

The administration of intramuscular (IM) injections is a routine practice in healthcare facilities of all sizes, from small clinics to large hospitals. Gluteus maximus (ventro gluteal) is the primary site for the procedure in adults. Deltoid being the second most common site. Paediatrics cases quadriceps (vastus lateralis) is the preferred site as the muscle is well developed. These set of sites have been recommended because of their large muscle mass and ease of access. Drugs administered via intramuscular route are vaccines, analgesics, antibiotics, hormonal, vitamin compositions. Gluteus maximums is the most chosen site because of it's large mass and accessibility. The unsafe, improper methods and unsterile technique make it prone to abscess formation following intramuscular injection. Gluteus maximus being the preferred site is prone to abscess formation. Abscess is confined collection of pus surrounded by inflamed tissue. It can be of two types, exploding/impounding types. Gluteal abscess can lead to anorectal abscess formation and even end up as a fistula. The minor procedure of intramuscular injection can also progress to bacteraemia, sepsis and multi organ failure. Sometimes even tissue necrosis can occur. Staphylococcus aureus is the most common organism. Improper techniques of using small size of needles in obese individuals delivers drug into subcutaneous tissue layers. Skin breach due to injections leads to several complications. Risk factors that result in complications are malnourishment, obesity, co morbidities like diabetes milletus, chronic renal or liver disease, immune suppressed patients having disseminated malignancies, undergoing radiotherapy/chemotherapy, infected with HIV. Poor general health condition e.g., anaemia, malnourishment, cachexia act as precipitating factors to abscess formation. Early identification of condition, reporting of complications help in management and prevent further worsening.

Aims and objectives:
Study aims at quantifying the disease burden on health care set up, enumerate causes of abscess formation, improvising injection techniques, educate on importance of sterility practices, early diagnosis to minimise morbidity, improvise quality of life. Interpret the efficacy of treatment modalities practiced.

2. Materials & Methods

The study method used is case series and was conducted on patients admitted in the hospital wards with complaints of gluteal abscess following intramuscular injection in the Department of General surgery, Alluri Sita Rama Raju Medical College during the time period Dec 2023 - Jun 2025. Four patients were studied in this regard.

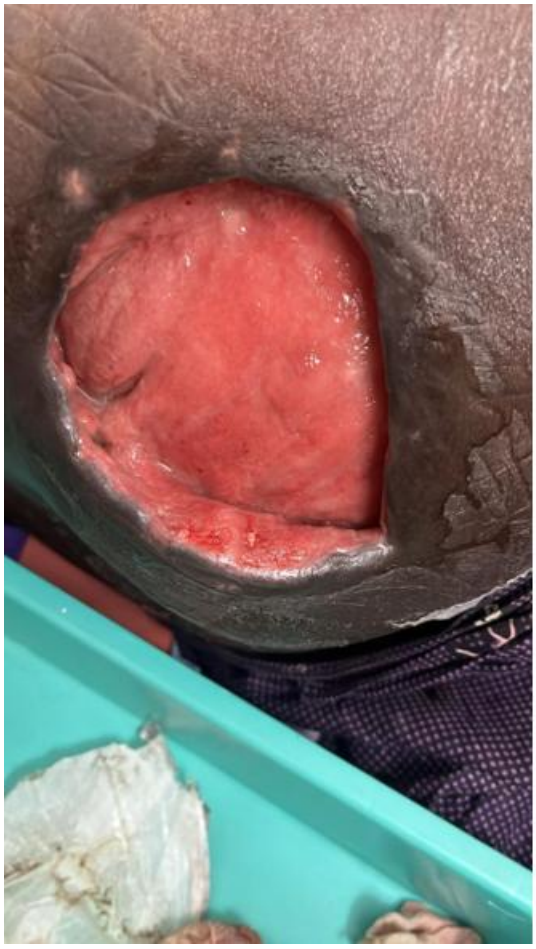
Inclusion criteria:
Age > 14 years.
Administered intramuscular Injection with in 30days before presentation.
Symptoms at the site of injection.

Exclusion criteria:
Paediatric age group.
Underlying bone disease.

3. Observations

In the case series study over a span of 18 months four cases were reported and studied. Three of the were females and one male. were diabetic and two had no comorbidities. Thirty four cases had initially presented with complaints of low back pain. Six of them, patients with had presented with swelling, pain and limitation of movement of right gluteal region. Three of them uncontrolled DM. History taking revealed intramuscular injection by local health care workers. Examination revealed swelling in gluteal region with signs of inflammation. Twenty eight of them resolved conservatively, while three needed iv antibiotics, incision and drainage, daily dressing and other symptomatic treatment. The patients with

uncontrolled DM abscess progressed to ulcer formation and needed vac pack dressings and secondary suturing for approximation. It was even observed that two of the females were obese. All of them were from rural set up and had been provided from the regional first aid centres by local practitioners.



McIvor et al suggests that the condition results from inoculation of skin pathogens by the needle or seeded hematogenously

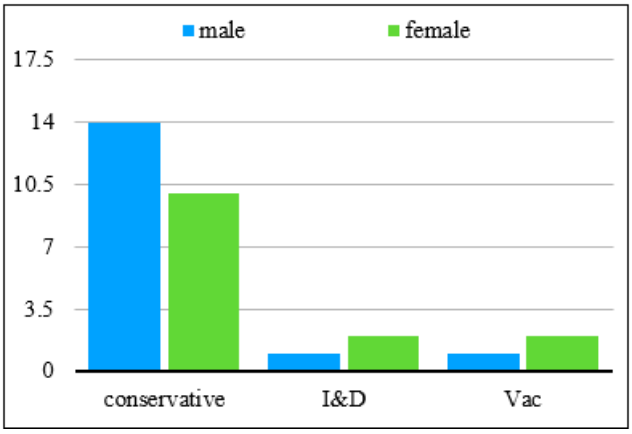
Statistics & Operative Details.

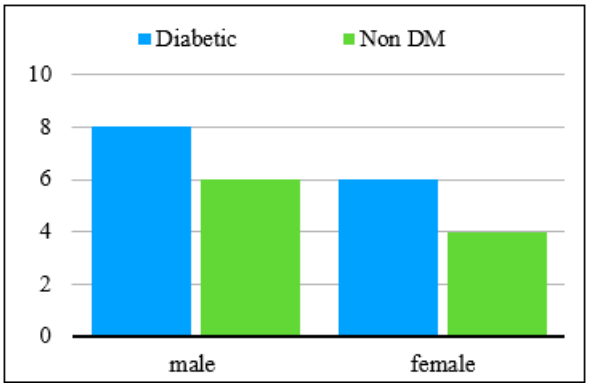
The incidence of intramuscular injection complications ranges from 0.4 to 19.3%

Greenblatt DJ et al noticed 31% of patients had abscess formation among patients with complications,

In Boston Collaborative Drug Surveillance Program, 0.4% of patients had local complications. among almost half of the hospitalised medical patients received at least one intramuscular injection.

Few studies it has been observed that unnecessary complications such as abscess, hematoma, cellulitis, tissue necrosis and sciatic nerve injury with limb paralysis can be prevented by competent technique with sterile practise.





4. Discussion

Though intramuscular injection is a common procedure wrong technique, improper practice of sterile methods, non-use of disposable needles, the needle size to fat pad ratio and co morbidities make it susceptible to complications. Patients with intense localised pain and tenderness after 24 to 48 hours following injection should be followed up and kept under observation high index of suspicion is recommended.

Various research papers ventrogluteal region is much safer for intramuscular injection compared to dorsogluteal region as it is free from major blood vessels or nerves with a consistent layer of subcutaneous fat.

5. Results

- Twenty eight of them got relief from oral medications - antibiotics, analgesics and other symptomatic treatment.
- Three of them resolved with iv antibiotics, incision and drainage, daily dressing and other symptomatic treatment.
- Three of them with abscess progressed to ulcer formation and needed vac pack dressings and suturing for approximation.

6. Conclusions

- The study suggests that if the health professionals had been well trained with the intramuscular technique then there would be less tissue trauma and ischaemia.
- Prevalence of usage of strict aseptic conditions would have limited bacterial inoculation.
- Proper follow up after the administration, late diagnosis could have been avoided.
- Hence overcoming the above shortfalls would reduce the incidence of gluteal abscess following intramuscular injection.

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