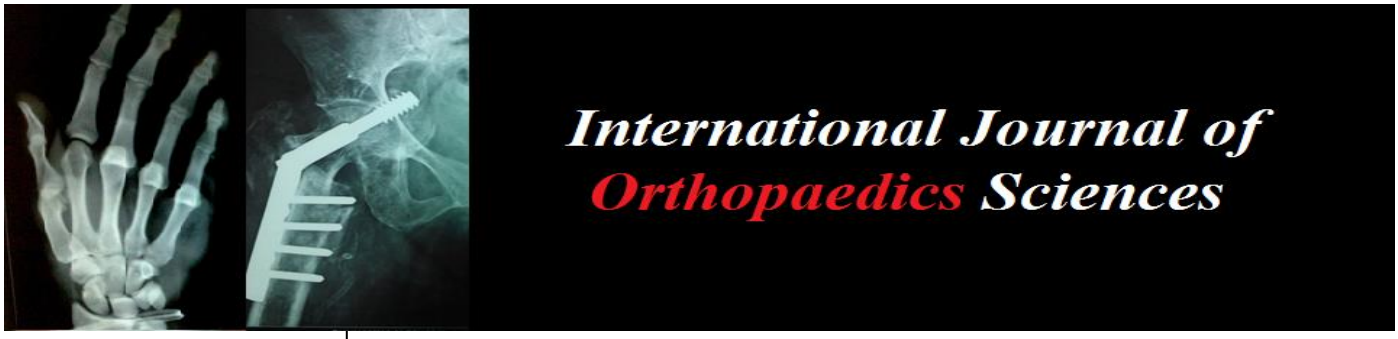

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Foreign bodies in orthopaedic emergency: two-year study at Barzulla hospital GMC Srinager

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Abstract
This study was carried out at Government hospital for bone and joint surgery Barzulla at GMC Srinager from March 2017 – March 2019. All the patients who presented with soft tissue, upper and lower extremity foreign bodies in emergency department were included in the study. Patients with foreign bodies who were referred from peripheral hospitals and associated surgical department of the college were also included in the study. A total of 52 foreign body patients were included in the study period. All except two foreign bodies were removed in the emergency operation theatre of the department. Out of 52 patients 36 were females. The mean age was 23 years and the most common foreign body removed in the study period was metallic needle followed by piece of wood.

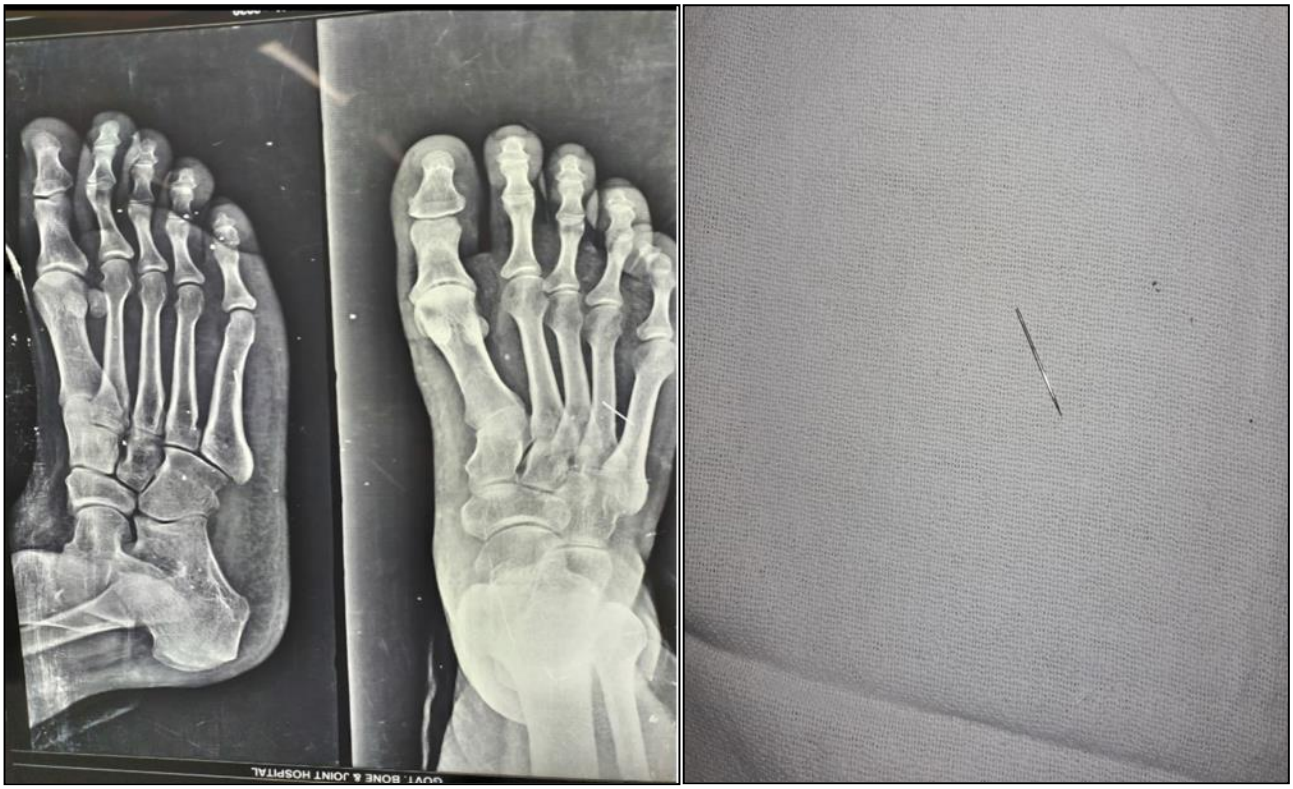
Keywords: Foreign body, needle, glass, ultrasonography, abcess

Introduction
Foreign body injuries are not uncommon. Foreign Body penetration may occur in almost any part of The body. The major routes of foreign body exposure are through the skin by penetration, the gastrointestinal tract by ingestion, and the lungs by aspiration and abuse. The degrees of injury may vary. For this reason, while a number of patients exposed to foreign body injury seek medical care, others remove the foreign body themselves. Delayed treatment may lead to complications including infection, delayed wound healing, inflammation, and loss of function [1]. Attempts at removal can also result in complications including further tissue damage, foreign body migration or retention, infection, and neurological damage. In orthopaedic emergency most of the foreign bodies are encountered in soft tissues of extremity, and rarely intraarticular in small joints of hand and foot. Our study was carried on all the patients who reported to emergency department with foreign bodies.

Materials and Methods
This study was carried at bone and joint hospital. The initial assessment was made by detailed history, thorough examination, plain radiographs, and ultrasonography. Ultrasonography is a useful diagnostic tool in the evaluation of skin and soft tissue foreign bodies [2]. One study reported that almost 38% of foreign bodies in the hand were overlooked by the initial examination [3]. Ultrasonography complements traditional radiography in cases of suspected retained soft tissue foreign bodies of unknown origin. It should be strongly considered in high-risk cases and cases of radiolucent foreign bodies. Tetanus prophylaxis was routinely employed if there was no booster dose of tetanus immunization within 10 years. Passive immunization with tetanus immunoglobulion was also ensured in patients with contaminated wounds with unknown history of tetanus immunization. Antibiotics prophylaxis was given to all patients with cefazoline 500 - 1000 mg and metronidazole 15 mg/kg. All the cases were admitted in the hospital. Cases with history suggestive of embedded foreign bodies with fresh wounds were surgically explored in operating room and careful retrieval, under regional or local anesthesia and tourniquet control was undertaken under aseptic precautions. Digital X-rays with markers at puncture site and ultrasonography were performed in cases where it was not palpable. In cases where wound exploration did not identify the foreign body, per operative fluoroscopy was employed. The patients were admitted in the emergency. Proper history including occupation, nature of foreign body, attempt to self-removal, and local examination

were documented. Radiograph views at least two were taken in all patients to assess the size and location of foreign body. Proper base line investigations and serological tests were performed. Local anaesthesia was used in 46 patients, however four patients were performed under spinal anaesthesia and one child under general anaesthesia. Intraoperative flourscopy was in emergency operation theatre in cases to minimise the soft tissue dissection. Patients performed under local anaesthesia were discharged on the day of surgery with advice to continue oral antibiotics for three days. Patients performed under spinal and general anaesthesia were discharged on the second postoperative day.

Radiographs
Case 1

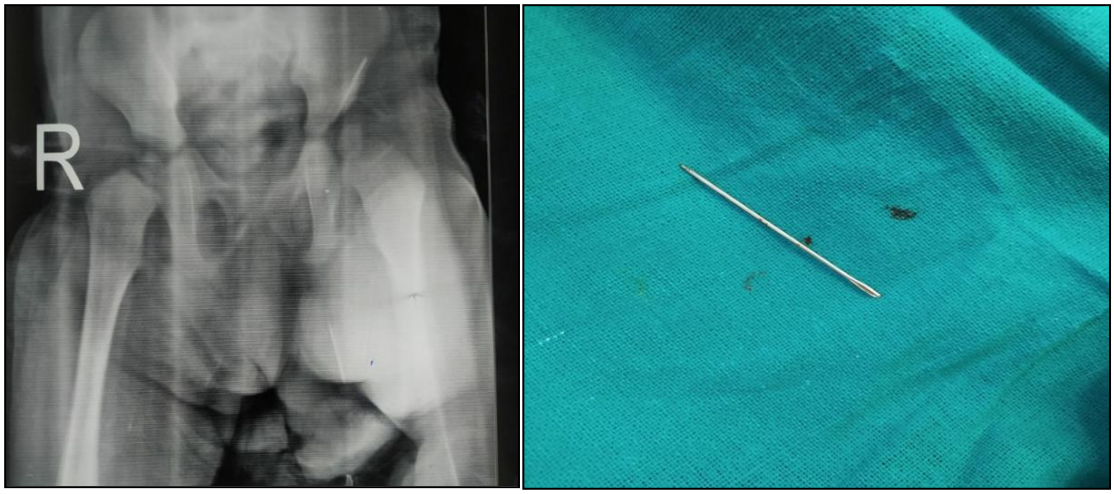


Thirty two year old female with accidental injury to right foot. Foreign body (needle) was removed in this case.

Radiograph
CASE 2

Foreign body in the posteromedial aspect of knee joint. Utrasonography was performed to know the exact location and the foreign body was removed under floroscopic guidence under spinal anaesthesia.

Radiograph
CASE 3



This child has accidentally injured his left gluteal whlie sitting. Foriegn body was removed in emergency operation theatre under general anaesthesia.

Results

1. Number of patients

Out of 52 patients, 36 were females and 16 were males. Around 70 percent patients in our study were females

Table 1: (Number of patients)

Total patients	Male	Females
52	16	36
Percentage	30.7%	69.3%

2. Age group

Most of the patients were in the age group of 21-30 years and the mean age was 23 years. The youngest patient in our study group was two year old.

Table 2: (Age distribution)

Age groups in years	No. Of patients
Less than 10	02
10-20	11
21-30	20
31-40	10
41-50	8
51-60	01

3. Reporting time to emergency in days

Maximum patients reported on the day of injur

Table 3: (Reporting time)

Time	No.of patients
On same day	41
On day one	6
On day two	4
Within one week	2

4. Anaesthesia used

Most of the foreign bodies were removed under local anaesthesia, however 4 were removed under spinal anaesthesia and one under general anaesthesia.

Table 4: (Nature of anaesthesia)

Anesthesia	No. of patients
Local	46
Spinal	04
General	01

5. Nature of foreign body

The most common foreign body in our study group was needle. Most of the injuries were accidental penetration. Wood and glass pieces followed needles as the second and third common foreign body in our study respectively.

Table 5: (Nature of foreign body)

Nature of foreign body	No.of patients	Percentage
Needle	28	53%
Wood piece	13	25.3%
Glass	7	13.1%
Pencil	02	3.8%
Metallic other than needle	02	3.8%

6. Body distribution

Most of the foreign bodies were removed from foot and hand. 08 foreign bodies were removed from soft tissues of leg and 02 from thigh. one superficial foreign body (glass) was removed from interscapular area.

Table 6: (Body distribution)

Anatomic location	No. of patients	Percentage
Foot	19	36.5%
Hand	16	30.7%
Leg	08	15.3%
Forearm	04	7.6%
Thigh	02	3.8%
Gluteal	01	1.9%
Interscapular	01	1.9%
Knee	01	1.9%

Complications

Two patients in our study had superficial wound infection. Both were managed on oral antibiotics. In one case with a foreign body glass in right calf, the glass piece broke in to three small pieces while retrieving, however all the pieces were removed in same procedure.

Discussion

General evaluation for a retained foreign body includes a detailed history and physical examination as well as plain film radiographs. Metal, glass, and wood are the most common retained foreign bodies [4]. Our study also shows metallic needle and wood pieces as most common foreign bodies in orthopaedic emergency. Both glass and wood can be radiolucent and difficult to see on radiograph images. Glass accounts for up to 50% of missed foreign bodies using physical examination and radiographs, [5] and plain radiographs have been found to be only 7.4% sensitive at identifying wood foreign. We used ultrasonography in most of the patients to determine exact location and depth of foreign body in our study. Ultrasonography is potentially useful for any type of foreign body, it is extremely useful for the detection of radiolucent foreign bodies such as wood, plastic, thorns, and cactus spines [6, 7, 8]. In addition, the sensitivity of US improves with the size of the foreign body. In a study performed by Jacobson *et al.*, [9] wooden foreign bodies 2.5 mm in length were detected with a sensitivity of 87% and specificity of 97%, and 5-mm-long wooden foreign bodies, with a sensitivity of 93% and specificity of 98%. In patients with a foreign body injury, the primary decision should be whether the removal of the foreign body is necessary. It should then be decided where the intervention should take place: either in the emergency room, or at the operating room under sterile conditions and under fluoroscopic control. A planned procedure is the key for successful treatment [10]. Superficial located, palpable or protruding foreign bodies that can be removed without further damage can be removed in the emergency room. Local anesthesia is generally adequate for such injuries. Hocaoglu *et al* [11], in their study of 86 patients with hand injuries due to foreign body reported that they performed the surgical operations of the patients under local anesthesia in 94.2% of the patients. In current study also most of the patients were performed under local anaesthesia. The foreign body should be extracted through the closest point to the surface and with minimal dissection possible. Extraction of radiopaque foreign bodies with the aid of fluoroscopy would prevent unnecessary tissue damage and decrease the rate of infection. Irrigation should always be done after extraction In the case of contaminated wounds with irregular borders, the wound should be debrided [12]. Haverstock [13] emphasized the importance of infection in perforating wounds of the foot, and in this regard, he reported that cleansing and antibiotics in the initial treatment are crucial. In diabetic patients in particular, complications as serious as infections and sepsis, can develop following foreign body injuries [14]. In one of studies (15), the feet (43.2%) are the predominantly affected location. In The most common complication was infection (10.3%) and contaminated wounds possess more risk in this context. The rate of infection is lower in needle (6.25%) and glass wounds (7.14%); this may be due to the nature of those injuries, which are generally not contaminated with minimal tissue damage. On the contrary, the rate of infection (38.4%) is higher in contaminated wounds that develop with puncture by wood and other materials most commonly occur in external environments. Foot and hand are the predominant locations in our study.In our study only two patients developed superficial wound infection and were managed on oral antibiotics.

Conclusion

Foreign body injuries are severe injuries that may cause significant problems when ignored. Majority of the sufferers are middle aged females and present with history of puncturing or penetrating injury that suggest the presumptive diagnosis of foreign bodies. Metallic needles followed by Wooden splinter injuries were most commonly encountered. Plain radiographs reliably diagnose and locate metallic, glass, and stony foreign bodies; however, wooden foreign bodies are often not revealed by plain x-rays. Surgical exploration in operating room and careful retrieval under anesthesia and tourniquet control suffice as the definitive treatment. In rare instances, intraoperative image intensifier is needed to locate foreign bodies per operatively.

Conflict of Interest: None

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