



A NOVEL TECHNIQUE OF TREATMENT OF OSTEOID OSTEOMA BY C-ARM GUIDED PERCUTANEOUS CAUTERIZATION.

Orthopaedics

Dr. Pravin Ranvir	Assistant Professor, Department of Orthopaedics, Government Medical College And Hospital Aurangabad, India.
Dr. Nilesh Indulal Kachnerkar*	Associate Professor, Department of Orthopaedics, Government Medical College and Hospital, Aurangabad, India. *Corresponding Author
Dr. Vinit Jain	Professor, Department of Orthopaedics, PT J.N.M. Medical College, Raipur (C.G.).

ABSTRACT

An osteoid osteoma is a benign, painful tumour, mainly affects adolescents and young adults, occurs predominantly in the appendicular skeleton. Pain is relieved with small doses of salicylates & after removal of the nidus.

20 patients with osteoid osteoma were treated with percutaneous c arm guided drilling and cauterization technique. The mean age at presentation was 16 years. A follow-up visits scheduled for three month and six months after the procedure to assess clinically subjective relief of pain and radiologically reduction of reactive bone formation.

Pain relief was achieved with no radiological recurrence in all patient. Percutaneous drilling and cauterization is technically simple and an effective method for managing osteoid osteoma.

KEYWORDS

osteoid osteoma, c-arm guided drilling, percutaneous cauterization

INTRODUCTION:

An osteoid osteoma is a small, benign, painful tumour with no malignant potential. Osteoid osteoma is 5% of all bone tumours, and 11% of benign bone tumours (1). It mainly affects adolescents and young adults (2, 3). The hallmark of classical presentation is unremitting, sharp, boring pain which worsens at night and increases with activity, and it is dramatically relieved with small doses of salicylates (aspirin, 20-30 minutes, 75-90%). (2,3)

This benign lesion i.e. osteoid osteoma consists of a small, vascular, friable, oval nidus of osteoblastic tissue which is surrounded by sclerotic bone. Prostaglandins produced by the tumour result in a chronic inflammatory response in the surrounding tissues which is demonstrated by a periosteal reaction and synovitis. These regress spontaneously after removal of the nidus [7,8].

There are 3 main approaches for removal or destruction of the nidus:

- 1) Wide en-block resection with the surrounding bone. (9)
- 2) Unroofing of the nidus by gradual removal of the overlying reactive bone and excision with curettes and burrs (10,11)
- 3) Percutaneous CT-guided core-drill excision, or destruction of the nidus by radiofrequency, laser or absolute ethanol, cryoablation, Interstitial laser ablation (ILA) performed using magnetic resonance imaging (MRI). (12,13,14,15,18)

MATERIALS AND METHOD:

20 male patients with osteoid osteoma were treated with percutaneous c arm guided drilling and cauterization technique. The mean age at presentation was 16 years (range 14-18 years). The diagnosis is based on severe pain, relief of pain after administration of NSAID, and radiological features. The duration of pain before presentation to the outpatients department varied from 6 months to 40 months. All patients had received medical therapy with NSAID before procedure. We confirmed the nidus smaller than 1.5 cm in diameter on computed tomography. No patients had previously undergone surgery for the lesions. Lesions were located in proximal femur in all patient. Patients were informed of alternative treatments and informed consent was obtained from the patients or their parents. A follow up visit scheduled for 3 and 6 months after the procedure to assess clinically subjective pain and radiologically reduction of reactive bone formation. Pain relief with no radiological recurrence, the procedure is considered as successful.

OPERATIVE TECHNIQUE:

All procedures were performed in operation room under aseptic conditions with local anaesthesia or spinal anaesthesia. Patients were placed on a fracture table with an image intensifier and a C arm and the lesion localization was confirmed by c arm imaging (fluoroscopy). Entry point is marked and a small skin incision was made at the entry point and blunt dissection was done. Drilling by 3.2mm drill-bit was

performed using a percutaneous approach. With the same approach, Kirschner wire (k-wire) covered by feeding tube or angiocath was approached in to nidus under c arm guidance. Outer end of 2.5 mm Kirschner wire was in contact with tip of cautery lead. Through cauterization done at nidus and surrounding bone by inner end of 2.5 mm Kirschner wire. Cauterization is done for a total of 1-2 minutes. After cauterisation the k wire is removed and local anesthesia is injected for pain relief, and a compressive sterile dressing is applied. The patients were discharged in a period no longer than 1 to 2 day after the procedure.



Fig 1: Showing Patient Positioning And c-arm.

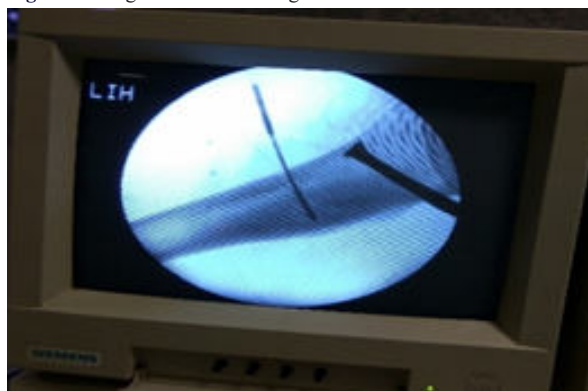


Fig 2: Showing Percutaneous Drilling With K-wire.

RESULT:

To assess the technical success, each patient was examined before discharge and evaluated for any complications, and other procedure

related problems. K wire was placed in the nidus and the procedure was technically successful in all cases and there was no procedure related complication. In all cases, the procedure was successful. All of the patients achieved complete pain relief within 2 to 3 days. All the patients were successfully weight bearing without any support. There was no activity restriction in all patients after the procedure.

There was no recurrence in any patient and EXCELLENT CLINICAL RELIEF was seen in 100% of PATIENTS.

DISCUSSION:

Conservative long-term treatment with non-steroidal anti-inflammatory drugs—which is problematic due to the side effects. (16). Wide en block resection of the nidus is difficult to know how much bone to remove, and it may necessitate using grafts and internal fixation, and post-operative immobilisation & infection [17]. However, at operation it may be difficult to localise the nidus in areas such as the femoral neck and talus. In CT guided radiofrequency ablation technique comprises various instrument. CT scan is costly, not available in every centre & hazardous due to radiation exposure. (12,13,14,15) Interstitial laser ablation (ILA) is performed using magnetic resonance imaging (MRI) guidance, thus preventing radiation exposure of the predominantly adolescent patients but MRI is costly and not available in every centre. (12,13,14,15,18, 19). In Thermal cauterization after percutaneous drilling, instruments required are power drill, drill bit, k-wire, c-arm, feeding tube which are available in every orthopaedic operation theatre. However, there was no complication in our study as reported in previous studies (skin burn, skin and fat necrosis, soft tissue infection, vasomotor instability, tendinitis, and hematoma) [20,21,22,23].

CONCLUSION:

This study is a new method which has advantage of the minimally invasive procedures of nidus removal; diminished hospitalization time, cost effective and less post-operative pain were seen in our patient population as compared with previous studies.

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