

## **Original Research Article**

### **Osteoid Osteoma: a modified technique of conventional open excision**

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**Abstract:** Osteoid osteoma is a benign, small but very painful bone tumour. The treatment consists of excision / destruction of nidus. In the past, conventional open excision of nidus was the usual treatment but now a days various other techniques have been described e.g. Percutaneous drilling, laser photocoagulation, chemical destruction or radio frequency ablation. These techniques have more predictable chances of nidus excision and fewer side effects. Although advocated currently but these newer techniques are not widely available everywhere in developing world. So open en-block excision is still the commonly used method for treatment in the developing world. We treated 5 cases of osteoid osteoma of long bones with modified open excision of tumour. Before definitive surgery for excision, we made a drill hole of 4 mm with an Steinman pin under local anaesthesia in the lesion and sent the patient for a repeat CT scan to know the exact location of the nidus in relation to the whole trajectory. During definitive surgery we located the hole trajectory and removed excised the nidus with very little cortical bone removal. In results all five patients were cured. The conclusion in this technique of open excision after CT localization is a safe, low cost and effective alternative to conventional en-block excision.

**Keywords:** Osteoid osteoma, excision, CT localization.

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#### **Introduction**

Osteoid osteoma is a benign, extremely painful and well localized bone tumour. The tumour has little or no growth potential [1]. It commonly occurs in the long bones (of the lower extremities) in children or young adults. Nocturnal pain, dramatically relieved by aspirin or nonsteroidal anti-inflammatory drugs, is a typical sign of this tumour. Radiologically osteoid osteoma consists of a round or elliptic, lucent lesion of less than 10 mm in diameter, called the “nidus”, surrounded by a zone of reactive bone sclerosis.

Complete removal or destruction of the nidus is curative for this disease. The management of osteoid osteoma has changed in recent years from open “en bloc” resection of the area containing the nidus to more accurate and sophisticated ways of treatment e.g. percutaneous drilling [2], LASER photocoagulation [3-4], chemical destruction [5] or radio frequency ablation [6-10] of the nidus, all of them by way of CT guidance. These modalities have been shown to have many advantages over the traditional “open” method, including a higher success rate and fewer associated complications [6, 8, 9].

#### **Patients and methods**

We treated 5 cases of osteoid osteoma of long bones, two of them were in upper end of femur and three were in diaphysis of Tibia. The clinical diagnosis was made based upon patient’s history & X-Rays. The diagnosis was confirmed with the help of CT scan showing a typical nidus in all cases. After confirming diagnosis, we took the patient in Operating room and a hole was made with the help of a 4 mm Steinman pin under local anaesthesia in the centre of the lesion under C-Arm control. Although nidus could not be seen under C-Arm but we tried to drill the hole as near as possible after analysing the position of nidus in CT scan. The hole was made on the surface of the bone, from where we planned the lesion to approach for definitive surgery.

After the procedure, we sent the patient for a repeat CT scan and asked the radiologist to comment accurately on the relative position of nidus in relation to the trajectory of hole. After obtaining this information we took the patient for definitive surgery.

During surgery, we first located the hole trajectory and as we know the exact location of nidus

from the whole trajectory, we were able to excise the nidus with very little removal of cortical bone. The tissue excised was sent for biopsy.

### Results

All 5 patients were cured. They had immediate pain relief. Post operative check X-Rays didn't show any nidus. Post operative CT scan was not done.

### Discussion

Although spontaneous regression of osteoid osteoma after long-term administration of nonsteroidal anti-inflammatory agents has been reported, the side effects of prolonged medication and the lack of histologic diagnosis are still a major concern in conservative treatment [6, 11]. Therefore, surgery is often the treatment of choice for this tumour.

No matter what modality is chosen, complete removal or destruction of the nidus is necessary to obtain a successful outcome. Pain is dramatically resolved postoperatively if the nidus has been removed.

The main difficulty with conventional open excision or en bloc excision is in the intraoperative identification of the nidus using a fluoroscope because of the extensive sclerosis around the nidus. Misjudgement often results in failure of the procedure due to incomplete resection. Excessive bone blocks together with the tumor have to be removed to ensure total excision. This may jeopardize bone strength and cause fractures.

Several methods, including nuclear scanning, tetracycline fluorescence, tomography, MRI or CT, have been used to improve the accuracy of localization of nidus [12-14]. Because CT scan provides a more precise location of the nidus, treating osteoid osteoma with CT guidance gained popularity since last 20 years.

The ideal treatment of Osteoid osteoma requires excision / destruction of the nidus during surgery, without sacrificing too much cortical bone. Several methods have been described e.g. electro cauterisation, ethanol injection, LASER photo coagulation, radio frequency ablation and various CT guided percutaneous procedures.

CT guided percutaneous procedures and CT guided radio frequency ablation are two most advocated procedures now a days as they satisfy both the conditions of destruction of nidus and minimal removal of cortical bone. But their major disadvantage includes the high cost of acquiring specific instruments and probes required.

As radio frequency ablation is not available everywhere in India and other developing countries,

conventional open en-block excision is still a commonly used method for treating Osteoid osteoma in this part of world with its all disadvantages.

The proposed technique is a slight modification of conventional open en-block excision technique, where we have tried to localize the nidus in such a way that it guides us to complete excision of nidus without sacrificing too much cortical bone.

### Conclusion

This technique of open excision after CT localization is an safe, low cost and effective alternative to conventional en-block excision. It does not require any additional equipment or facility. The surgical incision & amount of bone removed is greatly reduced and at the same time the certainty of excision of nidus is greatly increased.

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