

Case Report On Giant Cell Tumour In Distal End Of Radius Left Side Managed With Chemical Cauterization And Bone Grafting

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Abstract

Giant cell tumour of the bone is a regionally assertive neoplasm that is implemented in practice with elongated curettage and therapeutic interventions, which would be having lesser risk of recurrence. The skeletal tumour is a single, non malignant, but regionally assertive cancer. In the fully grown skeleton, it most frequently affects the epiphysis region of bones. This is most common in the femur, tibia and lower end of radius. Lower end of radius tumour makes up of about 10 percent of overall bony tumours. The obliteration of osseous and cartilages in the proximal distal radius giant cell tumour cells makes salvaging the forearm joint morphology and feature difficult. Numerous techniques are given, such as wide excision and allograft rebuilding or ulna centralized control with wrist fusion. We reveal, outcomes of a lower end of radius tumour adequately treated with chemical cauterization and bone grafting, to retain forearm and hand degree of freedom and supination with better functional recovery.

Key words: Bone Grafting, Giant cell tumour, Chemical cauterization, Bone grafting, case report.

INTRODUCTION:

Giant cell tumour (GCT), a regionally obtrusive, non malignant bone tumour, mainly affects people aged 20–40. The lower end of the radius is by far the well known region of GCT, aside from the lower end of femur and tibia (1). This GCTB site exhibited a significant reoccurring propensity. En bloc excision rather than surgical excision intralesional was frequently used as a conventional method for assertive lower end of radius tumours to ensure acceptable surgical margins. However a lower recurrence rate has been expected, ever more deleterious excision with major surgical restoration resulted in more side effects. Furthermore, with the growing demands for wrist function in people who are now youthful and productive, a less invasive option is preferred (2). As a consequence, in order to identify an individualized treatment approach, a more thorough knowledge of significant predictors for both oncologic and developed and developing is required. The Campanacci grade, pathologic fracture, tumour spot, type of adjunctive therapy utilized, and the principal or relapsing tumour have all been recognized as possible risk variables for tumor recurrence of GCTB. Patients experience discomfort, inflammation, joint effusion, and lack of mobility (ROM). Curettage alone and in combination with tissue augmentation, that is prevalent among 20 to 25 percent of all Giant cell tumours, significantly increases local re - occurrence. Treatments such as en bloc resection, curettage with physiochemical adjuvant, and denosumab are also beneficial (3).

The skeletal giant cell tumour is a single, non malignant, but domestically assertive cancer. In the fully grown skeleton, it most frequently affects the epiphysis region of bones. This is most common in the femur bone, shinbone, and distal radius (4). Distal radius GCT makes up for about 10percentage points of total bony GCT. The goal of existing GCT surgical procedures notions is to recoup normal physiology after tumor tissue removal, avoid the occurrence, and reestablish forearm and arm purpose to as natural as possible. Extended curettage and rebuilding with bone or polyacrylate (PMMA) compaction are the standard treatments for GCT of a distal end of radius. When affiliated with the damage of osseous and joint capsule, the juxta-articular fractured bone GCT is complicated to recoup the wrist combined morphology and feature. Wide excision and restoration utilizing functional auto grafts fibula (vascular zed/non-vascularized), autografts, or centralized control of the medial bone of forearm with wrist arthroplasty have been regarded as having a lower incidence of relapse. Even though prevalent, lower end of radius rebuilding by same side proximal fibular joint replacement has drawbacks like non-anatomical restoration, non-union, and graft defects (5). Seradge presented a method for rebuilding the distal radius utilizing ulnar translocation and connective tissue. It also has the additional advantages of getting a local highly vascularized graft without any need for minimally invasive surgical procedures, but it can result in weakening grip strength and setback of wrist movements (6).

We report a case of Giant cell tumour in distal end of radius left side adequately treated with chemical cauterization and graft, to retain forearm and hand degrees of freedom and supination with better functional recovery.

PATIENT INFORMATION AND CLINICAL FINDINGS

We report a case of 25 year old who visited AVBRH with the complaints of complains of pain and swelling over left wrist joint from last 1 month. Patient was alright 1 month back when he developed a swelling on his left wrist which was sudden in onset and gradually progressive in nature .Swelling was associated with pain which increases with movement of wrist. Pain does not radiate to any other body part.

TIMELINE

Diagnostic Assessment

Various routine examination were carried out including blood test , liver and kidney function test but there were no significant findings . Histopath reports were suggestive of giant cell tumour of lower end of radius at epiphyseo-metaphyseal junction tumour that is mitosis 1-2/10Hp. Radiological assessment was also done in order to evaluate the degree and exact location of the tumour as shown in the X ray's below.



Figure 1 –Pre Operative X Ray With Lateral And AP

INTERVENTION

Multidisciplinary approach was used that included medical, surgical and physiotherapy. Excision Biopsy with Curettage from Distal End Radius Left side with bone grafting was treatment of choice .Under all aseptic precaution, patient in supine position .Approx 6 cm incision was taken over the dorsal side of the left wrist via Modified Henry's Approach and soft tissue Dissection was done. Tumour site was exposed and excised by curettage chemical cauterization done under liquid nitrogen and H₂O₂, Tissue was sample sent for histopathology and cavity was then filled with liquid nitrogen and h₂o₂ .Bone graft was taken from the iliac crest left side and cavity over distal radius was filled with bone graft and bone cement followed by sterile dressing. Below Elbow Slab was applied over volar aspect. Patient was kept nil by mouth for 6 hour post operatively and then I.V. was started of Normal saline 2 units at 80ml/hour along with Inj.Ringer lactate one unit at rate of 80 ml per minute. Pantaprazole was injected 40mg I.V. once daily. Along with antibiotic Ceftriaxone 1 gm I.V. twice daily for 5 days and amikacin 500 mg I.V. twice daily for 3 days. In order to relieve pain Injection of dynapar aq of 75 mg in 100 ml normal saline was given I.V. twice daily. Patient was advised to keep the limb elevated. Physiotherapy call was made in order to can early post operative functional recovery.



Figure 2 –Immediate Post-Operative X Ray

FOLLOW UP AND OUTCOMES



Figure 3 – Follow Up X-Ray Post Operatively After 2 Months

DISCUSSION

Cooper and Travers characterized the bone GCT for first period in 1818. Nelaton emphasized its native aggressive behavior, and Virchow reiterated its toxic potential. It is a rare, benign tumour, but it can start behaving unusually, regardless of outcome of radiation or histopathology assessments. It is typically found in the long skeletal morpho and includes the osseous bone without implicating the occlusal forces; however, larger tumours might very well broaden into the growth plate and, in rare cases, the diaphysis. The upper end of tibia, humerus, lower end of femur, and radius are common locations (7).

Based on the freezing - thawing cycles, Liquid nitrogen can be employed to preserve cells or for controlled necrosis. Cellular membranes are often destroyed by a rapid freezing followed by a delayed thaw. The study looked at the outcomes of cryosurgery with liquid nitrogen, combined with surgical removal and the inclusion of Composite in a limited sample of patients who had histological evidence of bone GCT in various locations (tibia, distal radius, and iliac bone) (8).

Giant cell tumour is a locally persistent tumour, and specific portion intralesional excision has a significant chance of recurrence. Giant cell tumour of the lower end of radius, as per some scientific literature, it is an unknown, aggressive, and often travels across the body to peripheral organs, most notably the lungs. Take note the likelihood of surgical removal and post-reconstruction functional inadequacy while planning large local resection to prevent recurrence. Many patients who intralesional had prolonged curettage with insufficient remaining subchondral bone support suffered supplemental joint instability, severe arthritis, and relapse. (9).

En-Block excision of the tumour and reconstruction using unilateral upper end of fibula auto graft (vascularized/non-vascularized), tri-cortical iliac graft, anatomical allograft, distal ulnar centralization, and other methods are being developed. Several researchers have employed non-vascularized femoral neck autograft restoration with good results (10). Non-union (12-38%), graft fractures (13-29%), and risk of contamination are not prevalent in these instances. Other constraints include greater operative time and donor area comorbidity. The necessity for specialized microsurgical procedures frequently restricts the adoption of perivascular grafts in such situations. Only in sophisticated orthopedic settings are allograft widely offered. Following lower end of radial excision, ulnar relocation to radius and wrists arthroplasty is a faster treatment that uses a single incision and the presence of a distant ulnar perivascular graft locally. Seradge described the approach, and only a few examples have been recorded. The maximum vital of the ulna graft is kept with minimum dissecting of the ulna soft tissue connections and maintained muscle connection, which aids in bone formation union, decreases rates of infection, and preserves strong finger grip strength. Despite the fact that we have produced just one forearm, the pronator teres connection in the ulna aids in pronation, and the biceps, coupled with the supinator, operate as a right arm supinator. As a result, this approach conserves rotation. Local relapse of the tumour is not reliant on the restoration approach, but on thorough en bloc removal with minimal tumour leakage in the incision. In this procedure, the carried back distal ulna serves as a vascularized graft. The predicted difficulty of proximal ulna cut end extrusion during supination and pronation has still not been noticed by us or the majority of the writers. If the endosteal sleeve of the teleported ulna retains continuity with the native ulnar periosteum, radio-ulnar synostosis might occur. Puri et al. reported one incidence of radio-ulnar synostosis. Our patient had no problems or local relapse till the latest follow-up, and she has a very satisfactory functional result (MSTS score -28/30) (11).

In recent studies, previously established risk factors—tumor type or structural fracture—could not be validated to influence local recurrence. Young age has been proposed as a risk factor for GCTB RFS, possibly due to much more aggressive bone metabolism in the young generation. However, we discovered that age or less 33 was not a key factor influencing the RFS of GCTB, but female patients had a somewhat higher RFS than male patients, indicating that gender affects the recurrence rate ($p = 0.0435$). Gender, however, was not an independent prognostic factor of recurrence when joined with other covariates in a little further multivariate Cox linear regression. The critical clinical pathologic determinants for recurrence Tissue extension and tumour size were shown to be the main important clinic-pathologic variables in the recurrence rate change. Soft tissue extension was found in patients presenting in the current investigation, and the calculated HR from our multivariable Cox regression is 5.321 ($p = 0.011$), clearly showing that

tissue expansion increases the recurrence rate of GCTB. Furthermore, a tumour diameter of 5 cm (30/58 patients) was found to be an independent indicator of tumor recurrence in GCTB in the distal radius. It can be characterized by the difficulties in attaining full surgical margins in cases of tissue growth or oversize, which resulted in a high recurrence rate (12).

CONCLUSION

Diagnosis of neof ormation bone is challenging and takes a significant skill, especially in young individuals. Osteolytic lesions that occur by chance at a large bone epiphysis might be misconstrued. If diagnosed quickly and aggressively, this tumour may have an excellent prognosis. It is critical to understand unusual cancer sites in order to get an accurate diagnosis.

INFORMED CONSENT:

Written consent was taken from the parents after briefly explaining the goals of intervention.

CONFLICT OF INTEREST:

There is no Conflict of Interest

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