Fracture of the Greater Tuberosity of the Humerus, Fixation with ActivaScrew™'s Cannulated

M.D. Aleksandr Nikinin,
Orthopedic Trauma Surgeon
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## Summary table

<table>
<thead>
<tr>
<th>Patient №:</th>
<th>2</th>
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<tbody>
<tr>
<td>Patient name:</td>
<td>ЗГД</td>
</tr>
<tr>
<td>Smoking:</td>
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<td>Alcohol:</td>
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<td>Other diseases:</td>
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<tr>
<td>Surgeon:</td>
<td>Dr. Alexandr Nikitin</td>
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<td>Diagnosis №:</td>
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<tr>
<td>Diagnosis:</td>
<td>Fracture of the Greater Tuberosity of Humerus</td>
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### Injury date: 20.02.2012
- Immobilization: Scarf bandage
- Mobilization exercises start after 4 weeks
- Active exercises after 6 weeks
- Weight lifting after maximum range of motion achieved

### Hospital stay: 7 days
- Blood loss: Yes
- Preventive antibiotics: No

---

### Implant 1:
- **Implant insertion:** ActivaScrew™ Cannulated B-ALC-3545
- **Drilling:** Perfect
- **Drill bit:**

### Implant 2:
- **Implant insertion:** ActivaScrew™ Cannulated B-ALC-3545
- **Drilling:** Perfect
- **Drill bit:**

### Surgery:
- Without technical complication
- Remarks: Within normal

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<th>2 weeks (on the phone)</th>
<th>6 weeks (on the phone)</th>
<th>3 months (on the phone)</th>
<th>1 year (phone)</th>
<th>6 years</th>
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<td>Satisfactory</td>
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<td>Range of motion:</td>
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1 Case Description

The patient was 54-year-old, slightly overweight, woman. She got injured in everyday life. She applied to the Outpatient Clinic and then was sent to the City Hospital #40 in Saint Petersburg. Preoperative X-ray revealed a displaced fracture of the greater tuberosity of the left humerus.

![Preoperative X-ray](image1)

**Figure 1** Preoperative X-ray

2 Surgical Procedure

Bone fragments were repositioned through a deltoid split approach to the humerus. First, k-wires fixed the fractures. Two 3.5 mm x 45 mm bioabsorbable ActivaScrew™ Cannulated with partial thread, were inserted along the k-wires. The bone quality was not optimal, so it was decided to insert ActivaScrew™ Cannulated also through the 2nd cortex.

![ActivaScrew™ Cannulated insertion along the k-wire](image2)

![Intraoperative X-ray of the k-wire and ActivaScrew™ Cannulated with the adapter head](image3)

**Figure 2** ActivaScrew™ Cannulated insertion along the k-wire

**Figure 3** Intraoperative X-ray of the k-wire and ActivaScrew™ Cannulated with the adapter head
For postoperative immobilization, a scarf bandage was applied. Passive shoulder joint and elbow joint exercising was approved after 4 weeks for two weeks. In this phase, the patient takes off the scarf bandage 5-6 times a day and starts to exercise the elbow joint and bending and abducting the shoulder joint to 90° in a passive mode. After the two-week period, at week 6, the patient started more active exercises. Weight lifting was permitted only after a full range of motion for this person in the shoulder joint was achieved.

During the first 3-4 weeks, the primary osteo-cartilage callus in the fracture zone is formed, which allows you to keep fragments together during passive movements. Bone fusion in this zone occurs in 6 weeks, so we proceed to the active phase of exercise therapy. It is advisable to load an extremity with a weight (light dumbbell, expanders) only after reaching a full range of movements in the joint.

3 Results

The course of the postoperative period was normal with excellent clinical and radiologic results. After 6 weeks control radiographs showed the correct position of the fragments and consolidation.

After 6 years, the patient was called for a follow-up examination. CT scan was performed for an accurate assessment of fracture consolidation and bone canal condition. The patient was pain-free and could do all the activities of daily life. The CT scan shows that screws were completely resorbed, and the canal is filled with bone.

**Figures 4 and 5**  
CT scan of the shoulder joint six years after the operation
4 Discussion

ActivaScrew™ Cannulated 3.5 mm with partial thread are well suited for fixing greater tubercle fractures. The complete consolidation of the fracture of the large tubercle is shown on the CT scan of the shoulder joint. After 6 years follow-up, the bone channels at the location of the screws have been overgrown with new bone.

I have been very satisfied with the absorption of ActivaScrew™ material, PLGA, poly-L-lactide-co-glycolide. With PLGA I avoid complications usually related to bioabsorbable materials. I have not had cyst formation, tunnel-widening or implant-related inflammatory reactions with Bioretec products.

5 Contact Information Concerning the Case

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