

**Gluteal Pillar Iliac Crest Autograft Harvest Using Acetabular Reamer Technique: As Effective as Reamer-Irrigator-Aspirator System**

*Elizabeth B. Terhune, MD; David Joseph Fischer, BS; Joel C. Williams MD; Jeffrey S. Earhart, MD  
Rush University Medical Center, Chicago, IL, United States*

**Purpose:** Gluteal pillar iliac crest (GPIC) harvested with acetabular reamer is a method to obtain autograft from the ilium. The powered reamer efficiently harvests large amounts of graft and preservation of the iliac crest architecture may decrease postoperative pain. The purpose of this study is to evaluate nonunions treated with GPIC harvested with the acetabular reamer technique compared to reamer-irrigator-aspirator (RIA). We hypothesized that nonunion treated with GPIC would achieve union rates equivalent to those treated with RIA.

**Methods:** Patients who underwent nonunion repair with autograft (2015-2020) were retrospectively reviewed. Injury characteristics, operative data, and radiographs were collected and reviewed until final follow-up. Radiographic union was the defined end point. Complications at both the donor and nonunion site were reviewed and analyzed.

**Results:** 71 patients met inclusion criteria. GPIC and RIA graft were utilized in 48 and 23 patients, respectively. Average follow-up was 49.5 weeks. The overall union rate was 74.6%, with no difference in union rates between the GPIC and RIA groups (79.2%, 73.9% respectively,  $P = 0.21$ ). No difference was found in time to radiographic union between the GPIC and RIA groups (19.7 weeks, 20.4 weeks respectively,  $P = 0.46$ ). 9 patients in the RIA group required a transfusion, compared to 5 patients in the GPIC group ( $P = 0.004$ ). Two GPIC patients had persistent harvest site pain that resolved without treatment by 6 months postoperatively. One patient had a superficial infection at the GPIC harvest site, which resolved with oral antibiotics.

**Conclusion:** For the treatment of nonunions, autograft harvested from GPIC via the acetabular reamer technique achieves similar union rates and time to union as RIA. Transfusion rates are higher with RIA, while prolonged harvest site pain is a concern after GPIC. This study is the first to validate equivalent union rates of GPIC compared to RIA for the treatment of nonunion. Further clinical study and potential cost-savings analyses of this technique are warranted.

**Table 1: Demographics**

|                     | GPIC       | RIA        | p           |
|---------------------|------------|------------|-------------|
| Total Patients      | 48         | 23         |             |
| Age (mean)          | 45.7       | 55.8       | <b>0.01</b> |
| Male                | 33 (69%)   | 13 (57%)   | 0.31        |
| BMI                 | 28.19      | 28.67      | 0.39        |
| Smokers             | 11 (22.9%) | 4 (17.4%)  | 0.59        |
| Mechanism of Injury |            |            |             |
| MVA                 | 7          | 8          |             |
| MCC                 | 0          | 1          |             |
| Fall                | 33         | 8          |             |
| GSW                 | 1          | 0          |             |
| Other               | 8          | 6          |             |
| Open Injury         | 13 (27.1%) | 10 (43.5%) | 0.17        |

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.