stryker

Trauma & Extremities

Article summary: Synthetic bone graft substitute for treatment of unicameral bone cysts

The Journal of Pediatric Orthopedics, E-Published, 2020.

Carl Nunziato, MD, John Williams, MD, and Ronald Williams, MD, PhD
The Dell Medical School, University of Texas at Austin, Austin, Texas, USA

Study design and methods

- The purpose of this study was to compare rates of revision surgery in unicameral bone cyst (UBC) patients that received Pro-Dense Synthetic Bone Graft Substitute or historical treatments with allograft or autologous bone marrow aspirate.
- All potential UBC patients treated between June 2008 and December 2017 were reviewed.
- The primary outcome for the study was a comparison in the rate of revision surgery.
- Secondary outcomes included: revision surgery-free survival as evaluated by the log-rank test, rate of postoperative fracture, persistent cysts, continued pain and/or growth disturbance at the final follow-up.

Limitations and considerations

- This study is limited by its retrospective nature and small sample size.
- The authors acknowledge that the decision to revise is subjective and could be a source of bias.

Key results

- A total of 33 potential patients were screened, with 27 patients (18 Pro-Dense, nine allograft or autologous bone marrow aspirate) determined to have sufficient follow-up to be included.
- The average patient age was 9.6 years, with an average follow-up of 121 months after surgery.
- Seven of nine patients (77.7%) treated with allograft or autologous bone marrow underwent revision surgery for postoperative pathologic fracture (n=2) or resorption of the graft (n=5)
- Two of 18 patients (11.1%) treated with Pro-Dense underwent revision surgery, both for graft resorption.
- The use of Pro-Dense was associated with a decreased need for revision surgery over all time periods (hazard ratio, 0.14; 95% confidence interval, 0.03-0.05).
- There was no significant difference between the groups in incidence of postoperative fracture (2/18 vs. 2/9), persistent cyst (7/18 vs. 5/9), pain (0/18 vs. 2/9) or growth disturbance (1/18 vs. 3/9).

Table 1: Key outcomes for historical and Pro-Dense

Variable	Historical treatment	Pro-Dense
Revision surgery within 12 mo	5 (55.6%)	1 (8.3%)
Revision surgery within 24 mo	7 (77.8%)	2 (20.0%)
>1 revision surgery	4 (44.4%)	1 (5.6%)
Patients with pain at last follow-up	2 (22.2%)	0 (0.0%)
Postoperative fracture	2 (22.2%)	1 (11.1%)

Article summary:
Conclusions and takeaways

1. The authors concluded there was a significant difference in two-year reoperation rates in pediatric patients with UBCs treated with Pro-Dense compared to those treated with either autograft or autologous bone marrow aspirate. The historical group had a significantly higher revision surgery rate compared to the Pro-Dense group.

2. In bivariate analysis, the "historical treatment" group was also significantly more likely to have undergone > one revision surgery. The "historical treatment" cohort trended toward a higher likelihood of postoperative fracture, higher rates of persistent pain at last follow-up and recorded growth disturbance, although these associations did not reach statistical significance.

3. Patients in the Pro-Dense group typically had only one procedure (16/18, 88.9%) compared to the allograft/autologous bone marrow aspirate group, where 77.8% of patients required at least one additional revision procedure (Table 1).

4. In the setting of relatively benign postoperative courses, the main benefit conferred by with the use of Pro-Dense may have been a fewer number of procedures.

Content ID: AP-014466

Manufacturer:

1023 Cherry Road
Memphis, TN 38117
800 238 7117
901 867 9971

stryker.com