Single Stage Repair of Cartilaginous Defects with Juvenile Hyaline Cartilage: A Retrospective Review
Disclosure

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Our disclosures are in the Final AOFAS Program Book. There are no potential conflicts with this presentation.
A retrospective chart and radiographic review was performed on five patients who underwent five repairs of OCDs with juvenile hyaline cartilage. All OCD's were identified with MRI and treated via open surgical approach. After the glue solidified, juvenile hyaline cartilage allograft was prepared and placed within the defect and again covered with fibrin glue. This was then allowed to dry for seven to ten minutes. Post-operatively, all patients remained non-weight bearing for eight weeks. Following this, a course of physical therapy was initiated for four weeks. Patients were permitted to return to full activity at twelve to sixteen weeks.
Materials & Methods
Results

- Five ankles were repaired in five patients, three females and two males
- Mean age was 30 years (range 19-45; SD 12.8)
- Mean follow up time was 25.8 months (range 17-36; SD 7.3)
- Three OCD’s were located medially and two OCD’s were located laterally
- Graft incorporation, as defined by congruity within the talar dome and filling of all defects on at least two radiographic views, was 100% in all patients
- No signs of graft rejection or failures were noted
- Post-operatively, one patient developed lateral ankle impingement symptoms, successfully treated conservatively
  No additional surgeries were required
- No complications with medial malleolar osteotomies were noted
Surgical treatment of OCD’s is reserved for symptomatic focal lesions that fail to respond with conservative treatment. When choosing the appropriate technique, many factors need to be considered by the surgeon including defect size, location and extent of cartilage damage. A variety of surgical treatment options are available, including debridement with microfracture, retrograde drilling, allograft implantation, open reduction internal fixation (ORIF), autologous chondrocyte implantation (ACI), osteochondral autologous transplantation (OATS), and bone marrow aspirate (BMA).
Microfracturing has been a popular treatment option, as many proponents favor the minimally invasive approach via arthroscopy. However, in order for an OCD to be drilled, by definition the subchondral plate must remain intact. This, however, is not always the case, as more than 80% of OCD’s involve both articular cartilage and subchondral bone. Therefore a true microfracture technique cannot be employed when the subchondral plate is disrupted. This anatomic clarification may help explain why outcomes following debridement and microfracture have been reported to range from 65% to 90%. Choi et al have shown through second look arthroscopic analysis of OCD’s that near-normal cartilage is restored by microfracture in only 60% of patients.
The production of fibrocartilage has also been shown to be structurally weaker than hyaline cartilage and has been documented by second look arthroscopy to wear away over time.

There are limitations in our study:
- This is by design a retrospective analysis which is therefore inherently limited in application.
- In addition, all lesions were treated with the same surgical technique independent of defect size and location.
- A prospective study with a direct comparison to other techniques that assesses surgical outcomes may be necessary to determine if this treatment is a first line therapy.
In an attempt to avoid multiple surgical procedures, the authors present a case series where juvenile hyaline cartilage was utilized for surgical repair of osteochondral defects of the talus. This single staged open technique allows for direct visualization and results in the production of hyaline cartilage.
References