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PURPOSE: Management of chest wall reconstruction (CWR) following oncologic resection is challenging due to the nature if pathology, the radical procedure, and the employment of prosthetic materials required for biomechanical stability. Traditional material for CWR includes synthetic prosthesis (i.e. polypropylene or polytetrafluorethylene). However, biologic meshes might result in less wound complications. The aim of this study was to determine whether acellular dermal matrix (ADM) is associated with a lower incidence of complications following chest wall reconstruction for an oncologic resection defect compared to synthetic mesh.

METHODS: We performed a retrospective study of consecutive patients who underwent complex chest wall reconstruction (CWR) using synthetic mesh (SM) or ADM at a single center. Only defects involving at least one rib resection and reconstructed with both mesh and flaps were included. We therefore excluded flap only or mesh only reconstructions and patients with a follow-up <6 months. Patients’ characteristics, treatment factors and outcomes were prospectively documented. The primary outcome measure for the SM versus ADM groups was surgical site occurrence (SSO). Secondary outcomes were specific wound healing, infective, and medical complications, as well as 90-day mortality and re-operation.

RESULTS: One hundred forty six patients (95 [65.1%] with SM; 51 [34.9%] with ADM) underwent CWR with both mesh and flaps for repair of oncologic resection defect. Mean follow-up was 29.3 months (range, 6–109), mean age was 51.5 years, and mean defect area was 173.8 cm². SM CWR patients underwent more rib resections (2.7 vs 2.0 ribs, \(P = 0.006\)) but similar sternal resections (29.5% vs 23.5%; \(P = 0.591\)) than ADM CWR patients. SM CWR patients experienced a significantly higher SSO (32.6% vs 15.7%, \(P = 0.027\)) than ADM CWR patients. The 2 groups had similar rates of specific wound healing complications. No differences in 90-day mortality, nor re-operations were observed. Multivariable analysis identified prolonged hospital stay, comorbidity, prolonged operative time, and synthetic repairs to be predictive factors of SSO.

CONCLUSION: ADM CWR results in less SSO than SM CWR, when combined with soft tissue flap coverage. Surgeons should consider selectively employing ADM for CWR in patients at higher wound healing risk of complications.

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ASCOT- Autologous use of bone marrow derived Stem Cells for Osteoarthritis of the Thumb-1st CMCJ

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PURPOSE: The 1st Carpometacarpal Joint (CMCJ) in the hand is a commonly affected joint by Osteoarthritis (OA). It causes significant thumb base pain, limiting functional capacity. Surgical techniques are fraught with complications. Conservative management slows disease progression but does not reverse pre-existing damage. Microfracturing and application of Autologous Stem Cells has been performed on large joints such as the knee but has never been evaluated for use in the smaller joints in the hand. Our aim is to determine the potential benefit of Autologous Bone Marrow Stem Cells (BMSC) for treatment of osteoarthritis of the 1st CMCJ in the hand.

METHODS: All inclusion criteria were satisfied and patients were consented. Pre-operative assessment by the surgeon, Physiotherapist (PT) and Occupational Therapist (OT) was performed. Intra-operatively, BMSC were isolated from the hip via BMAC. The 1st CMCJ was opened and the joint surface microfractured. The BMSC were applied directly to the microfractured articular surface. Post-operatively the patients were followed up at regular intervals by the same surgeon, PT and OT. The assessments performed included: the visual analogue score (VAS) at rest and with activity, range of motion (ROM) in palmar abduction, functional DASH, strength test by lateral pinch, kapandji opposition score and the Grind Test. Statistical analysis was done
using Prism Software, comparing preoperative scores and scores 6 months later using a paired T-test.

RESULTS: All patients had a positive Grind test preoperatively and a negative test after 6 months. Statistically significant improvements were seen (Means scores with P values) VAS at rest 3.25 to 1.425 (P=0.0138), VAS on activity 7.7 to 3.9 (P=0.0021), ROM 46° to 53° (P= 0.0095) and DASH 47.23 to 18.7 (P=0.0046). Strength and Kapandji score improved insignificantly at 6 months. There were no significant postoperative complications. Patients were satisfied with the procedure.

CONCLUSIONS: This innovative pilot study is a new approach to OA of the thumb. It is a safe procedure with no post op complications. ASCOT 2 will be designed to determine the exact role of BMSC in this procedure with a control group receiving microfracture alone.

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Increased Complications in Prosthetic-Based Breast Reconstruction with Alloderm Compared to Total Muscle Coverage

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PURPOSE: Prosthetic breast reconstruction is the most common method in the treatment of patients undergoing mastectomy. The use of Alloderm acellular dermal matrix has become more popular in recent years for implant-based breast reconstruction.

METHODS: A retrospective review was performed of all patients undergoing prosthetic breast reconstruction between August 2002 and December 2013. Patients were analyzed in terms of demographics, fill volumes, number of expansions, costs, and complications. Long term follow-up beyond 2 years was performed to assess rates of revisions.

RESULTS: A total of 277 patients underwent placement of 466 breast tissue expanders. Although the total overall complication rate was not significantly different between the Alloderm and Total Muscle (TM) groups (31.4% vs. 21.5%, p>0.05), the rate of major complications was significantly higher with Alloderm (26.7% vs. 11.7%, p<.004). The mean initial fill volume was significantly lower in TM compared to Alloderm group (54 ± 47 vs. 167 ± 139, p=0.00003) resulting in a higher number of expansions in patients with total muscle coverage (7.7 vs. 6.1, p=0.00076). However, there was no difference in time to exchange for permanent implant (160.4 vs. 165.8 days, p>0.05). There is also an increased rate of revisions with Alloderm after average follow-up of 55.7 months (10.7% vs. 4.4%, p<0.01). Use of Alloderm added a mean cost of $2,217 for each breast.

CONCLUSION: Although the use of Alloderm allows increased initial fill volumes and fewer total expansions, this study shows an increased risk of major complications as well as considerable added cost without the touted benefits of decreasing revisions or time to expander exchange. Total muscle coverage remains an excellent option for providing quality breast reconstruction without increased complications.