and size-matched normative skull-caps to serve as a template for the shape of the reconstructed skull. VSP was also used to plan incisions, skin flaps, and tissue expansion. In addition, 3D printing was used to produce intraoperative reference models highlighting the neurovasculature and brain tissue.

RESULTS AND CONCLUSION: The challenge of craniopagus separation is due to the complexity of the venous plexus and shared dural venous sinus. Therefore, separation of the venous system of the twins requires meticulous planning and stereoscopic appreciation of the vasculature. Both VSP and 3D printed models were critical as references of the venous anatomy during separation and to the survival of both twins. VSP and 3D printing were also employed successfully in predicting the scalp and skull defects and designing custom guides and jigs which were used intraoperatively and facilitated surgical reconstruction.

HAND SESSION 2

Hand Transplantation in Patients with Extensive Burns of the Upper Extremities: Anatomical Study on Feasibility

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INTRODUCTION: Hand transplantation in patients with severe burns of the upper extremity presents unique challenges because of extensive skin and soft tissue deficit. In skin grafted recipient limbs there is an increased risk of exposure of vascular anastomosis, tendons and nerves. The aim of this anatomical study was to evaluate how to reliably transfer increased amounts of skin from the upper extremity based on the perforators of the main axial vessels to replace the scarred recipient skin.

METHODS: 25 upper limbs were studied. Based on the vascular anatomy of the perforators, forearm based hand allografts were harvested with 3 different patterns: A) volar and dorsal forearm flaps based only on distal perforators of Radial (RA), Ulnar (UA) and Posterior Interosseous (PIA) arteries and islanded medial arm flap based on Brachial and/or Superior Ulnar Collateral (SUCA) arteries; B) volar and dorsal forearm flaps with preservation of proximal RA perforators with only distal UA perforators and the islanded medial arm flap C) dorsal forearm flap and extended medial arm-volar forearm skin flap.

16 samples were injected with latex to map the perforating branches of the BA, SUCA, RA, UA and PIA. 3 samples for each group were dissected and injected with blue ink from the proximal BA to assess the retained perfusion of the flaps.

RESULTS: The medial arm flap was constantly supplied by perforators from the BA and the SUCA (respectively 4.35±1.64, diameter 1.03±0.34mm and 2.6±0.76, diameter 0.90±0.34mm) and adequately perfused when the perforators from the BA or SUCA were preserved (90.8% stained). Perforators from RA (9.3±1.62) if preserved, proved to be adequate to supply the total volar forearm skin (87.6% stained). The harvesting of the PIA with its perforators (5.25±0.95) provided vascularization to the proximal half of the posterior flap.

CONCLUSION: The medial arm flap should be safely based on perforators from the BA and the SUCA. The design of the specimens in group B proved higher vascularization reliability and versatility as they provided adequate vascularization to the skin flaps with minimal interference with the dissection and repair of vessels, tendons and nerves.

Distal Phalanx Replantation Using Delayed Venous Repair

Presenter: Anca Bordianu, MD, PhD
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INTRODUCTION: Vein anastomosis is the most important factor determining the success in the replantation of distal phalanx amputations. The purpose of the study was to show that the delayed venous method provides a higher success rate in distal phalanx replantations and does not require use of specialized techniques.

METHODS: The delayed venous method for vein anastomosis was used for the last 2 years. This surgical procedure includes initial arterial anastomosis, delayed expansion of the vein, and subsequent vein anastomosis. We have chosen to delay for at least one hour the veins repair, in order to allow the veins to expand to a more reasonable diameter for repair.

RESULTS: The delayed method was used in 7 cases. Expansion of veins up to 1 mm or more resulted in a high success rate (71%). In contrast, the success rate for distal phalanx replantation is extremely low in other techniques, because of the difficulty of vein finding and anastomosis.

CONCLUSION: It is very difficult to find the collapsed veins and to perform vein anastomosis immediately after arterial repair. The delayed venous method allows easier anastomosis of the subdermal veins of the distal phalanx. Therefore, it is a useful operative technique for treatment of amputated distal phalanx amputation.

Comparison of Results and Details of Upper Extremity Reconstruction with Free Vs Perforator Flap

Presenter: Tugba Gun Koplay, MD
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INTRODUCTION: In reconstruction of upper extremity defects there are many options like local, free, island and perforator flaps. Reconstruction with perforator flaps is new trend in plastic surgery. Because of good vascularity, upper extremity is one of the most suitable part of the body for designing well known and also ad hoc perforator flaps. In this study we aimed to compare of reconstruction of upper extremity deformities with free versus perforator flaps.

METHODS: We analyzed the results of 33 patients whom we made reconstruction of upper extremity defects. We performed free flaps for 12 (1W, 11M), perforator flaps for 21 patients (7W, 14M). Mean age was 38 for free flaps, 32 for perforator flaps. Etiologic factors were similar as trauma, gunshot injury, instrument exposition, burn and malignancy.

We evaluated size of defects, types of flaps, type of perforator or recipient vessel, operation time, hospitalization time, complication and results.

RESULTS: The mean defects size was 4.5x3 cm at which were reconstructed with perforator flaps, 8x12 cm at which were reconstructed with free flaps. ALT was performed for 5, medial sural for 1, latissimus dorsi for 1, SCIA for 3, gracilis for 1, ulnar perforator for 1 patient. 2 ven, 1 arter anastomoses were applied with radial arter at 9, ulnar at 2, digital at 1 patient. Radial arter perforator flaps was performed for 3, ulnar for 5 and digital for 3, dorsal metacarpal for 6, lateral arm for 4 patient. Mean operation time was 5 hours at free flaps and 1 hour at perforator flaps. Mean hospitalization time was 7 days for free flaps and 5 days for perforator flaps. Venous kongestion was seen at 60% of perforator flaps at operation room but resolved. Medical lesshes were applied for venous insufficiency at 8 patients. Partial flap loss was seen at 9 perforator flaps. We need more defatting at free flaps. Cosmetic results were obtained by both of methods.

CONCLUSION: Free flaps are used with success during many centuries especially at bone, instrument, tendon exposed wounds. However, perforator flaps are good alternatives, safe and simple if the defect is not too large. The perforator can be based on anatomical described perforators and also, flap can be designed as ad hoc perforator flap like free style free flap. Upper extremity is a good area for these flaps because of good vascularization and arcs between them. But, crush zon must be keep in mind when planning.

As a result, there is no another option except free flap in large defects, but if the defects is less than 4 cm especiall at distal part, perforator flaps can be performed with good cosmetic results and time consuming.