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INTRODUCTION: Expendable donor nerves in obstetric brachial plexus injuries (OBPI) are limited. This study investigates restoration of shoulder external rotation (ER) and abduction following single vs. dual recipient nerve repair in OBPI

METHODS: Retrospective chart review of single surgeon’s experience following repair of OBPI from June 1995 to June 2015. Twelve patients underwent nerve grafting +/- neurotization of the upper trunk only while fourteen patients underwent repair of the upper trunk and neurotization of the suprascapular nerve. Shoulder abduction and ER were recorded preoperatively and postoperatively in degrees. Postoperative range of motion and the difference gained in degrees following surgery were measured by independent t-test analysis.

RESULTS: Twenty-six patients met our eligibility criteria. Mean follow-up was 41.5 months (min: 12; max: 186; SD:39.5). Mean patient age at time of surgery was 30.1 weeks (min: 7.3; max: 48.7; SD:20.4). Mean degree of abduction gained postoperatively was 77.4 degrees (min: 15; max: 180; SD=53.2) following single recipient repair and 85.4 degrees (min: 20; max: 150; SD:46.5) following dual recipient repair. Mean degree of ER gained post-operatively was 56.5 degrees (min: 0; max: 95; SD:32.6) following single recipient repair and 59.4 degrees (min: 0; max: 95; SD: 37.5) following dual recipient repair.

CONCLUSION: Dual nerve repair of the upper trunk and the suprascapular nerve offers no statistical benefit when compared to single nerve repair of the upper trunk. The additional valuable donor nerve can be used to restore concomitant elbow or hand function in obstetric brachial plexus injuries.

Low Apgar Score As an Indicator for Prompt Referral to a Specialized Multidisciplinary Team in the Non-Operative Treatment of Obstetrical Brachial Plexus Injuries

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INTRODUCTION: Prompt physical and occupational therapy is crucial in managing non-surgical candidates with Obstetrical Brachial Plexus Injuries (OBPI). The objective of our study was to identify newborns suffering from non-operative OBPI in need of a “fast-track” evaluation by our multidiscipline team.

METHODS: Retrospective chart review of single surgeon’s experience of OBPI from June 1995 to June 2015. All non-surgical candidates (Narakas class 1) were included in the study. The Gilbert score and the Medical Research Council grading system were used to measure shoulder and elbow outcomes, respectively. Multiple subgroups analyses were performed to study the impact of time-delay on shoulder and elbow function. The ANOVA test and Welch’s test were used for statistical analysis.

RESULTS: A total of 168 patients were included in this study. Mean follow up time was time 313.8 weeks (min:52; max:1072; SD:228.1). Time delay between birth and the first consult to our clinic significantly correlated with shoulder outcome in the subgroup of newborns with Apgar scores <7 at five minutes. The following subgroups did not have a clinically significant association between shoulder outcome and time delay to consult: maternal diabetes, birth weight >4kg, use of forceps, asphyxia, multiple comorbidities, and Apgar score at one minute. Elbow outcomes remained unaffected by time delay in the total population and in all subgroups.

CONCLUSION: The subgroup of newborns with an Apgar score <7 at five minutes shows improved long-term shoulder outcome when promptly examined by an OBPI clinic. We recommend that that this “time-sensitive” population should be recognized and assessed by a multidisciplinary team before 12 weeks of age.

Endovascular Thrombolysis for Extremity Frostbite Decreases Digital Amputations and Hospital Length of Stay (LOS)
**Presenter: Dhivya Srinivasa, MD**  
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**INTRODUCTION:** Traditionally, frostbite management includes rewarming protocols, supportive care, and delayed amputation after tissue demarcation. Recent studies have described alternative management with angiography and intraarterial lysis to treat the microvascular thrombotic consequences of ice crystal formation. Our purpose was to evaluate the effects of intraarterial thrombolysis on digital amputation rates and hospital length of stay (LOS) for severe frostbite.

**METHODS:** We identified 17 patients with severe frostbite requiring greater than 48-hour intensive care unit admission from 2000–2017. In the treatment cohort, eight patients (7 males; 1 female) with a mean age 40 years (range: 16–68 years) underwent intraarterial thrombolysis treatment. For the control group, nine patients (8 males; 1 female) with a mean age of 53 years (range: 39–66 years) received non-surgical supportive treatment. Vascular comorbidities were noted in two patients (25%) in the treatment group and three patients (33%) in the control group. The number of digits at risk, duration of thrombolysis, thrombolytic agents used, number of digital amputations, hospital LOS, follow-up period, and complications, were all retrospectively reviewed using our electronic medical record (EMR).

**RESULTS:** In total, seven upper extremities and nine lower extremities, for a total of 80 digits, were at risk in the thrombolysis cohort. There were 100 digits at risk in the control group. Mean duration of thrombolysis was 26 hours (range: 5–55 hours). All treatment patients received tissue plasminogen activator (tPA) infused at 0.25–0.5 mg/hour in addition to heparin infused at 500–1000 units/hour. Intraarterial alprostadil was infused in four limbs (25%), two limbs (13%) received nitroglycerin, and two limbs (13%) received nicardipine. Amputation was required in 12 (15%) lysis digits and 77 (77%) control digits (p=0.0003). Average length of hospital stay was 14 days in the lysis group and 38 days in the control group. In the control group, two patients required extended hospitalizations secondary to amputation complications.

**CONCLUSION:** For treatment of severe frostbite, endovascular intraarterial thrombolysis is associated with lower rates of digital amputations and fewer hospital days when compared to current standard treatment protocols.

**Reference Citations:**

1. Tavri, S., Ganguli, S., Bryan, R. G., Governan, J., Liu, R., Irani, Z., & Walker, T. G. (2016). Catheter-Directed Intraarterial Thrombolysis as Part of a Multidisciplinary Management Protocol of Frostbite Injury. Journal of Vascular and Interventional Radiology, 27(8), 1228–1235.

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**Therapy of Upper Limb Hyperhidrosis with a Minimally-Invasive Endoscopic Technique: 18 Years of Experience**

**Presenter: Edoardo Raposio, MD, PhD, FICS**  
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**INTRODUCTION:** Primary palmar and/or axillary hyperhidrosis has a reported incidence of 1% to 3% of the general population. It can greatly affect everyday life and social activities, potentially leading to anxiety, depression, and difficulties in emotional management. Surgical sympathectomy interrupts the sympathetic cholinergic innervation to the hand and axillary eccrine glands. This procedure can improve the quality of life of these patients. Several surgical techniques are found in the literature, but most of them require multiple trocar insertions or carbon dioxide insufflation, each with related complications. In 1998, we described a single-entry, minimally invasive video-assisted thoracic sympathectomy technique. In this study, we report our experience with and evaluate the long-term results of this approach.

**METHODS:** Between 1997 and 2016, 760 patients underwent our video-assisted thoracic sympathectomy for a total of 1520 procedures. The surgeries