groups and absence in control groups. The increase in percentage of p63+ cells from week 2 to week 4 suggests that these stem cells are continuing to divide and regenerate the skin.

**Improving Quality of Life Through a Rehabilitation Program for Patients With Burned Hand**

**Presenter:** Mohammed Hassan El Fahar, MD, PhD  
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**BACKGROUND:** Burn injuries, including hands, are one of the most devastating injuries. Hand burns do not often play a major role in the mortality. But, they represent a huge problem that may eventually lead to chronic disabilities, lifelong impairment, and significant functional and occupational limitations. These comorbidities can negatively affect a patient’s quality of life (QoL) besides, making reintegration into society is difficult. This study aims to investigate the effect of our designated burn rehabilitation program on improving QoL of patients with hand burns.

**METHODS:** A randomized controlled study was conducted for 12 months. It included 60 adult patients with hand burns who were randomly divided and assigned to a study and control groups. Both groups underwent basic rehabilitation. A newly designed program was implemented for the study group. Data were collected using 3 tools; bio-socio-demographic characteristics, the Burn Health Knowledge Questionnaire, and the Burn Specific Health Scale-Brief. The QoL of patients with hand burns was evaluated 3 times.

**RESULTS:** One and 3 months after implementing the burn rehabilitation program, the total mean scores for the QoL of patients in the study group improved from 31.1 ± 11.3 to 118.5 ± 21.3 and 135.4 ± 24.3, respectively (P < 0.001). In addition, the changes in QoL of the patients in the control group significantly improved from 24.8 ± 12.1 to 57.6 ± 19.1 and 87.5 ± 23.8, respectively (P < 0.001). Despite this steady improvement in the control group, the mean scores on the QoL subscales and total mean scores remained lower than those in the study group.

**CONCLUSIONS:** Based on the results obtained in the current study, the design and implementation of a burn rehabilitation program based on clinical knowledge improve the QoL of patients with burns. Therefore, this program is recommended for use early as a part of the treatment process for patients with burns.

**Surgical Technique for Targeted Muscle Reinnervation at the Time of Below-Knee Amputation**

**Presenter:** Timothy Daugherty, MD, MS  
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**PURPOSE:** Targeted muscle reinnervation has been shown to improve neuroma pain and prevent neuroma formation by providing sensory nerves a pathway for growth, thus avoiding formation of a symptomatic neuroma. This procedure has been studied in the lower extremities for amputees with neuroma or phantom limb pain; however, there are no descriptions of the entire surgical technique when performed with below-knee amputation (BKA) and posterior skin flap closure. We present our current surgical technique for flap design, identification of donor and recipient nerves, and nerve coaptation.

**METHODS:** The anterior BKA incision is designed 10–12 cm distal to the tibial tuberosity with transverse length 2/3 the circumference of the calf. The posterior skin flap is designed extending distally by the same distance as the anterior arc. Marks are made on the skin to approximate the locations of the commonly used recipient motor entry points (tibialis anterior, extensor digitorum longus, peroneus longus, flexor digitorum longus, and soleus). Donor nerves that are identified for coaptation include the saphenous, sural, tibial, deep and superficial peroneal. The initial dissection is made under tourniquet. The saphenous nerve is identified through the anterior incision running in the subcutaneous tissue and is dissected distally before transection. The remainder of the anterior compartment muscles are dissected to identify the deep peroneal nerve, the motor entry point branches are preserved. The sural nerve is identified in the subcutaneous tissue at the distal end of the posterior skin flap, and a tug test confirms its location in the midline proximally. The
nerve is brought through the midline of the soleus and heads of the gastrocnemius for transfer. The vessels are ligated and the tourniquet is deflated for hemostasis. The motor entry points are confirmed with the nerve stimulator and transected. Preferred nerve coaptations performed include the deep peroneal to the motor entry point for tibialis anterior or extensor digitorum longus, superficial peroneal to peroneus longus, tibial to flexor digitorum longus, and saphenous and sural to entry points for the soleus. Transfers are followed by skin flap closure.

RESULTS: Targeted muscle reinnervation with BKA has been performed on 6 legs using this technique. Motor entry points were able to be stimulated while under tourniquet dissection (<40 minutes). Indications included trauma, wounds with chronic pain, and frostbite.

CONCLUSIONS: This method facilitates identification of all donor and recipient nerves efficiently, maintaining the ability to stimulate motor entry points while under tourniquet dissection. This procedure should be considered in patients experiencing chronic pain before amputation to prevent neuroma formation and phantom limb pain.

Assessment of Malpractice Claims Associated With Pressure Ulcers

Presenter: Charles C. Jehle, MD

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BACKGROUND: Pressure ulcers impose a significant burden on patients, the healthcare, and legal systems. An estimated 2.5 million pressure-induced injuries are treated each year in acute care facilities in the United States alone. Plastic surgeons are often involved in these patient’s care, particularly advanced stage ulcers. Regardless of cause or treatment setting where these wounds are incurred, many patients or their family go on to file lawsuits due in part to the development of these wounds. Consequently, institutions and sometimes physicians assume the risk of malpractice litigation or are involved as experts during these cases. There is a paucity of literature regarding malpractice claims associated with pressure ulcers. The goal of this study is to use a national legal database to characterize such malpractice claims.

METHODS: Retrospective analysis of the VerdictSearch legal database was performed on all legal cases from 1987 to present that resulted in a verdict or settlement related to pressure ulcers. A Boolean search for cases containing the terms “pressure sore,” “pressure ulcer,” “decubitus ulcer,” or “bed sore” was included in the search query. Malpractice cases were reviewed individually to ensure that they were directly related to the development of a new pressure ulcer. The final database was then analyzed using analysis of variance tests and chi-square analysis, based on plaintiff demographics, primary malpractice claim, defendant qualifications and specialty, the case outcome, and the amount of award in case of plaintiff decision/settlement.

RESULTS: A total of 141 individual cases were collected and analyzed. The plaintiff’s mean age was 72.5 and there were similar number of men and women plaintiffs, 52.5 versus 47.5%. The overwhelming majority of the lawsuits were for negligence, 75.9%, followed by malpractice, 22.7%. Most of lawsuits listed a hospital as the defendant (61.7%) followed by nursing homes (31.2%) then individual healthcare provider (7.1%). Of the cases available in the database, 25.5% resulted in settlements while plaintiffs and defendants won the verdict at similar rates, 34.8% and 36.2%, respectively. Individual providers were most likely to receive a winning verdict (80%) followed by hospitals (37.2%) then nursing homes (25%) (P = 0.035). Additionally, payouts were statistically different based on individual providers being responsible for mean of $400,000 ± $141,420 when they lost compared to $1,596,705 ± $2,481,178 for hospitals and $4,006,509 ± $7,755,644 for nursing homes (F value, 4.24; P = 0.022).

CONCLUSIONS: This investigation attempts to analyze malpractice trends pertaining to pressure ulcers and attempt to characterize their impact on our legal system within the framework of our current healthcare system. Specifically, although providers are least likely to be named as the primary defendant in these cases, they are the most likely to win. Moreover, a hospital is twice as likely to be named as the primary defendant compared to a nursing home, but a plaintiff is less likely to receive a winning verdict against a hospital defendant and awards are lower. Factors related to both medical and legal outcomes can suggest targets for quality improvement and suggests how practitioners may work toward reducing malpractice risk and refining patient care.