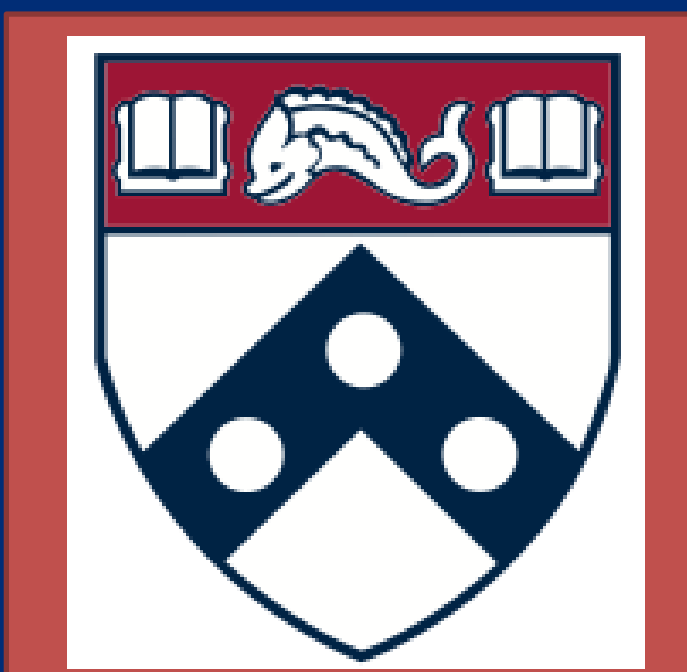


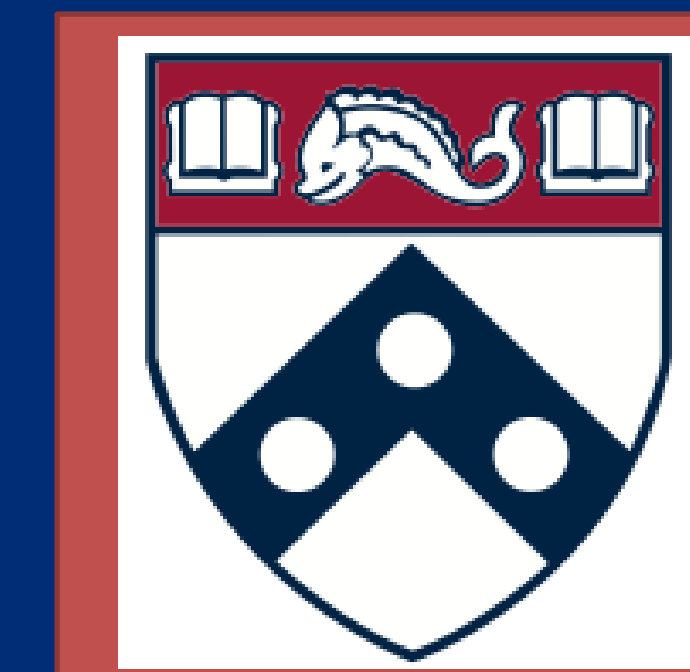


Outcomes AND Experience in Vascularized Composite Allotransplantation

1998-2021: “A Global Perspective”

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INTRODUCTION

Since its inception during World War II, advances in Transplant Immunology have made Vascularized Composite Allotransplantation (VCA) a viable option for many patients.

Beginning with the first hand transplant performed in 1998 by Dubernard in France and the first laryngeal transplant by Strome at the Cleveland Clinic, face, abdominal wall, and uterus have been transplanted with success.

The International Hand and Composite Tissue Transplantation Registry is the largest and most complete data bank in the world for VCA (1, 2).

The purpose of this study was to report all VCA and evaluate outcomes for a global perspective on the matter.

METHODS

We performed a systemic retrospective review of the International Hand and Composite Tissue Transplantation Registry data bank.

We also performed a systemic PubMed search, Google search, and literature review pertaining to VCA. Outcomes were evaluated for all VCA.

RESULTS

93 cases of upper extremity transplant have been reported to the Registry (Fig. 1):

- 39 cases are unilateral,
- 54 cases bilateral,
- Among them in 18 cases the amputation level was at the proximal forearm and in 14 above elbow.

5 recipients had graft loss in the post operative period, and 7 (5 unilateral and two bilateral) in long-term follow-up due to chronic rejection, graft vasculopathy. They were amputated in a period ranging from 265 to 4860 post-transplant days. One death occurred on POD 1 and another one on POD 65.

2 recipients for **lower extremity transplants**, one patient had his grafts removed and another died.

To date **48 complete or partial face transplants** have been reported, with two re-transplants performed. 8 deaths were reported, mainly due to malignancies and 5 cases of graft loss.

Three cases of **face and simultaneous bilateral hand transplant were performed but only one was** successful. Compared to other VCA's death rate in face transplantation is higher (six deaths reported to the registry following transplant) but the impact of this transplantation is enormous on the patients' quality of life and their satisfaction is very high (Fig. 2).

In total, **38 full thickness vascularized abdominal wall transplants**, 6 partial thickness vascularized and 17 partial thickness non-vascularized rectus fascia grafts have been reported worldwide (3).

At present a least **100 uterus transplants** have performed. Teams from Europe, North America, South America, and Asia have reported live births with 30 healthy infants delivered (oldest is currently 7yo with normal development). Transplants are from living or deceased donors.

5 Penile transplants have been reported, with 2 cases of graft removal.

Two cases of pediatric VCA have been reported: 1 total laryngeal transplant and a bilateral hand transplant with excellent functional outcomes.

Figure 1. Upper Extremity VCA

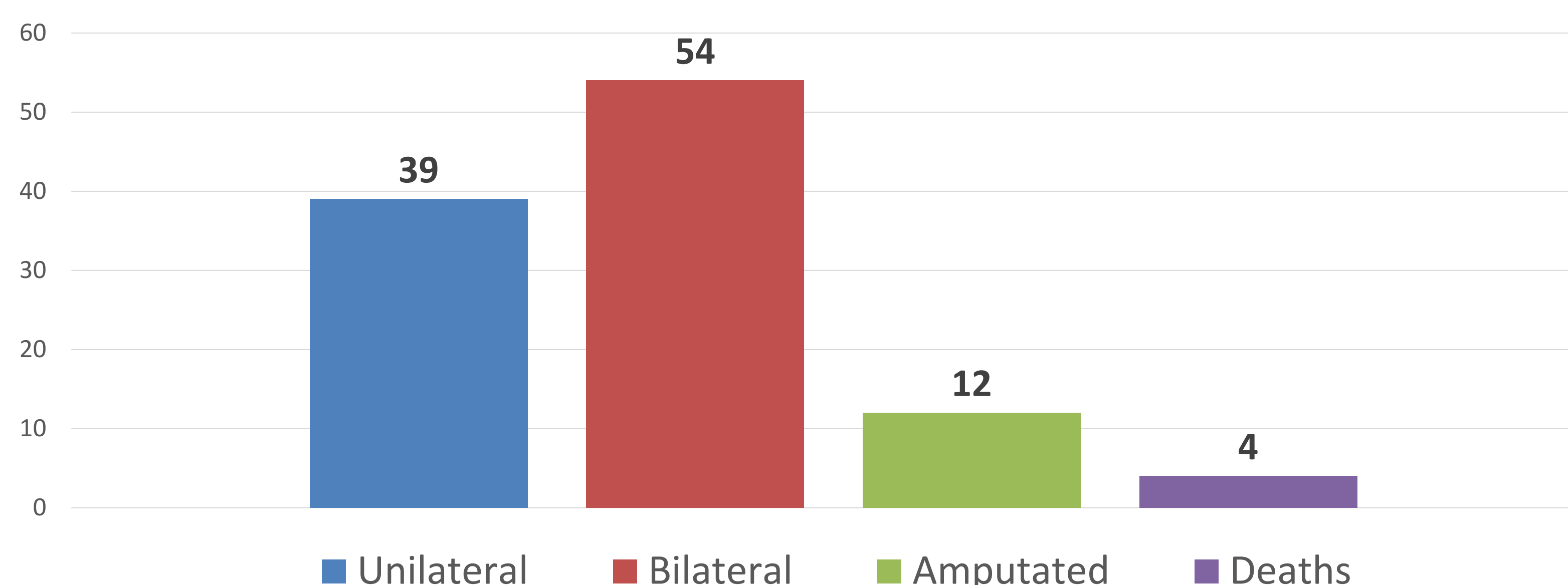
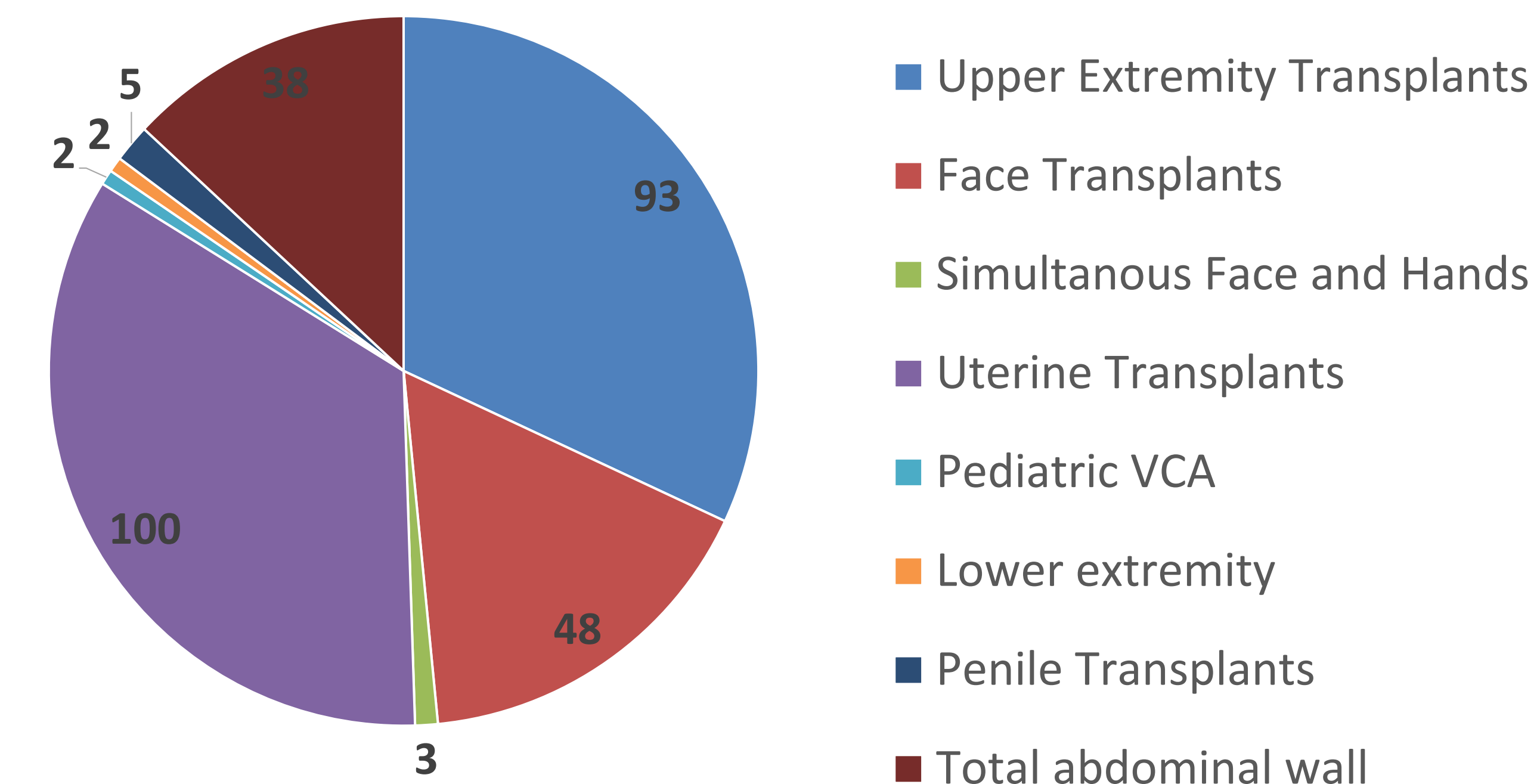


Figure 2. VCA types



CONCLUSIONS

Challenges remain regarding ideal immunosuppression, chronic rejection, standardization of outcomes and funding.

All VCAs are not lifesaving procedures and the balance risks/benefits must be carefully evaluated. VCA represents the highest step on the microsurgical reconstructive ladder.

Restorative surgery continues to evolve.

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