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Comparison of Amalgatome SD (ASD) to standard dermatomes for surgical excision of burns and skin graft harvesting

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Introduction

- The use of dermatomes, whether free hand, pneumatic, or electric, are used primarily for harvesting of split-thickness skin grafts (STSG) and the excision of burn eschar and non-viable tissue.
- A new type of pneumatic dermatome, the Amalgatome® SD (ASD - Exsurco Medical, Wakeman, OH), uses a high-speed rotating excision ring in lieu of the standard, oscillating blade of traditional dermatomes.
- The published findings of the ASD consensus panel reports that ASD provides better speed, precision and patient safety in debridement and skin grafts.[1]
- In three porcine studies on the ASD, the authors found consistency of the excised tissues was superior for the test device, which may result in better grafts and outcomes.[2]

Aim

- **The objective of this study was to compare surgical and outcome data between the traditional dermatomes and the ASD for surgical excision of burns and skin graft harvesting.**

Methods

- The burn center at University Medical Center associated with Texas Tech University Health Sciences Center (TTUHSC) in Lubbock, Texas is one of the most rural of the regional burn centers in the United States and covers a large geographic area spanning the western part of Texas and all of New Mexico.
- Burn cases from the TTUHSC author were analyzed from January 2017 through October 2021. The dermatome was used primarily up until August 2021 and during August, the ASD became the primary device for grafting and excision.
- Data from the 301 cases, 213 dermatome and 88 ASD, were entered into SPSS Software Platform (IBM Armonk, NY) for analysis.

Results

- Compared with the dermatome-treated patients, the ASD-treated patients tended to present with more severe TBSA and were more likely to experience multiple operations (46% vs. 32%, p=.067) [borderline]; to be intubated prior to arrival (31% vs. 15%, p=.012); to be transported via helicopter (31% vs. 12%, p=.008); and to be disposed to "other than their home" (49% vs. 28%, p=.003) and discharged with antibiotics (27% vs. 5%, p=.000).
- The average length of total operations was less for the ASD patients (93 vs. 114 minutes, but not significant, p =.006). When patients with TBSA < 25% are excluded, ASD operation length is significantly shorter, (122 vs. 171 min, p=.013).
- Laser was needed to treat for 17% of dermatome and only 4% of ASD, p=.019.
- Compared with dermatome-treated patients, the ASD-treated were more likely to be Caucasian (87% vs. 58%), be older (49 vs. 41 years old), p=.000.
- Borderline significance for COPD (7% ASD, 2% dermatome, p=.064); and for HTN (34% ASD, 22% dermatome, p=.088).

***Amalgatome SD excised and harvested autograft**

*Post Op: Day 5 | 1 Month | 2 Months

Patient: 31 year old oil field worker burned in a fuel truck explosion. Third-degree burns with TBSA=55%.

Conclusion

- **Our data, while limited in number of cases including the ability to control for influencing variables, suggest no differences in outcome data between the two devices.**
- **However, the ASD-treated patients were significantly more medically complex (greater TBSA, intubated, helicopter transported), while experiencing similar outcomes to the dermatome-treated patients (length of stay, graft take).**
- **Previous publications[1,2] have suggested the ASD may reduce operating time. The ASD operating time was significantly shorter in this study when patients with less than 25% TBSA were excluded.**
- **This study suggests the ASD could add value in surgical excision of burns and skin graft harvesting, and more research should be conducted.**

For all 301 Patients

Device		TBSA Percent area burned	LOS Length of Stay (days)	Total number of operations	Length of operation (mins)	Area grafted (cm^2)	Graft Take
Dermatome	N	203	115	113	110	107	104
	Mean	10.134	24.75	1.54	107.68	988.17	90.28
	STDEV	11.8987	24.960	.973	62.838	1113.334	19.575
Amalgatome SD	N	77	56	55	55	50	45
	Mean	14.403	24.09	2.15	103.98	1083.80	92.56
	STDEV	15.4745	23.329	1.850	48.765	1270.067	16.398

For Patients > 25% TBSA

Device		Length of operation (mins)
Dermatome	N	18
	Mean	171.33
	Std. Deviation	61.838
Amalgatome SD	N	14
	Mean	122.07
	Std. Deviation	36.996

References

1 Eriksson E, Grossman P, Pittinger T, Ellis C, Gillenwater J, Short T. Consensus on the Benefits of the Exsurco Medical Amalgatome SD in the Treatment of Burns and Other Wounds. Eplasty. 2019;19:pb5. Published 2019 Nov 18.

2 Hermans MH, Pittinger T, Bailey K, Powell HM. Report on Three Porcine Proof-of-concept Studies: Comparison of a Dermatome With a Rotating Excision Ring With Conventional Dermatomes for the Harvesting of STSGs and Excision of Necrosis. Wounds. 2019 Mar 29.

Disclosure

This study was sponsored by the manufacturer – Exsurco Medical (Wakeman, OH)