

TREATMENT OF HYPERTROPHIC GRANULATION IN BURNS: REVIEW OF THE LITERATURE

Paul Linneman, RN, Jeff Litt, DO, Carolyn Crumley, DNP
Sinclair School of Nursing, University of Missouri Health Care

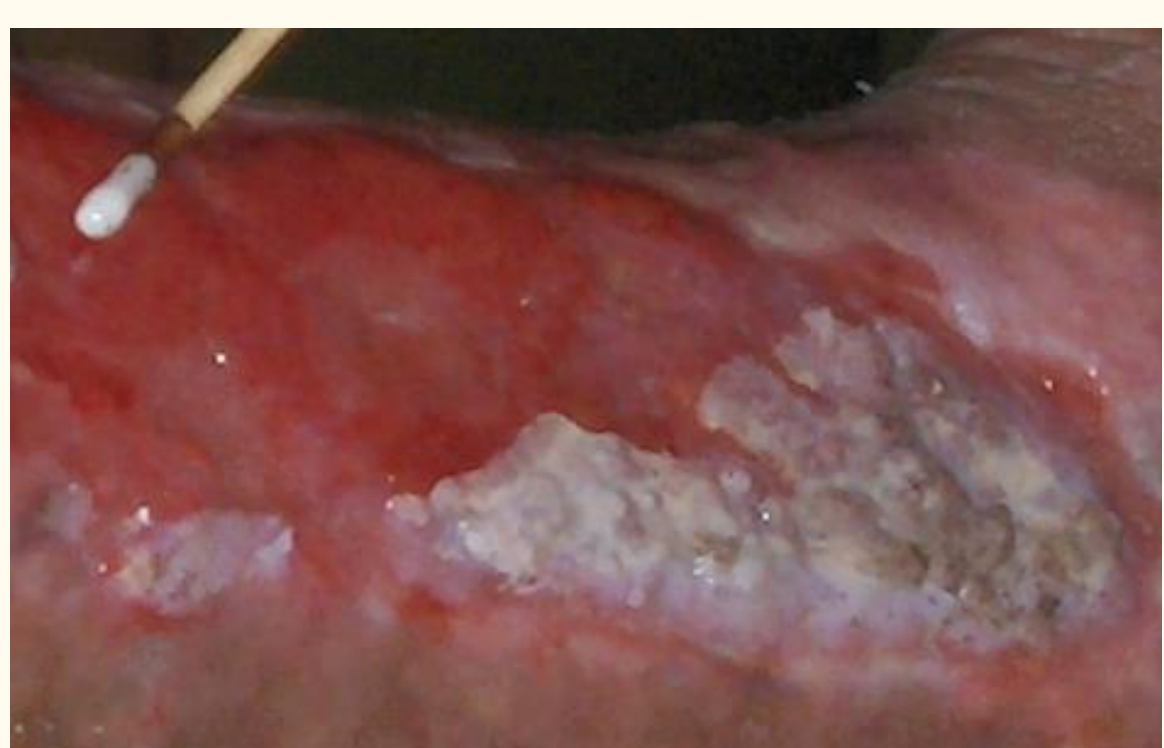
INTRODUCTION

- *Hypertrophic granulation (HG)* is defined as abnormal granulation tissue, raised above the level of surrounding skin.
- HG often occurs with *delayed healing*, or in areas of *graft failure* in burns.
- HG impedes wound healing.
- Treatment may vary by practitioner. Includes *chemical cautery* with silver nitrate sticks, *topical steroids*, and dressing strategies.

STUDY QUESTIONS

1. What modalities to treat HG are published?
2. How much does HG slow epithelialization?
3. How do treatment modalities compare in speeding healing?
4. What is the incidence of HG in burn care?

HG EXAMPLES



HG TREATMENTS

Topical steroid



Chemical cautery



595 nm PD laser

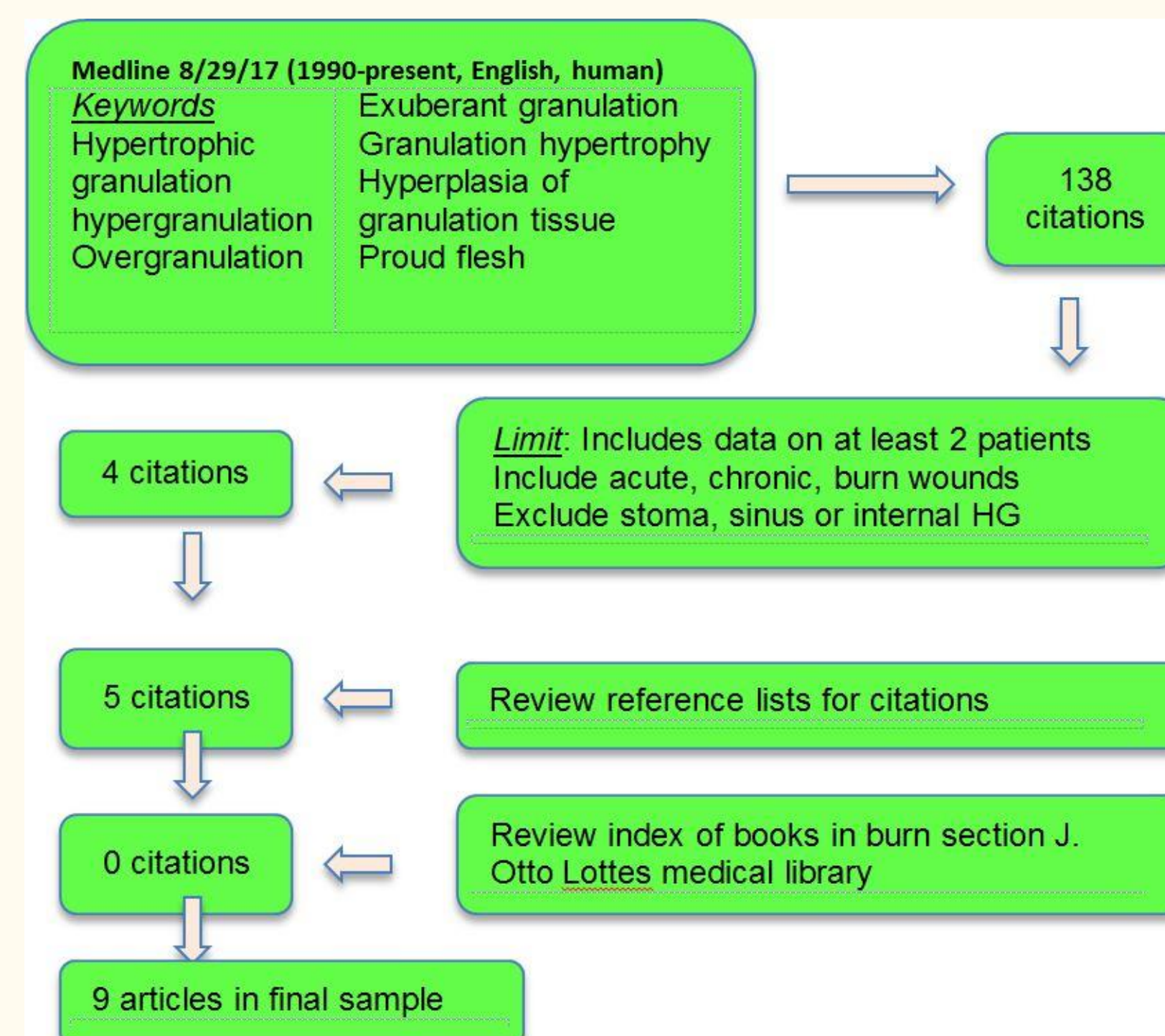


Foam dressing



Sharp excision
Antimicrobials
Pressure dssg

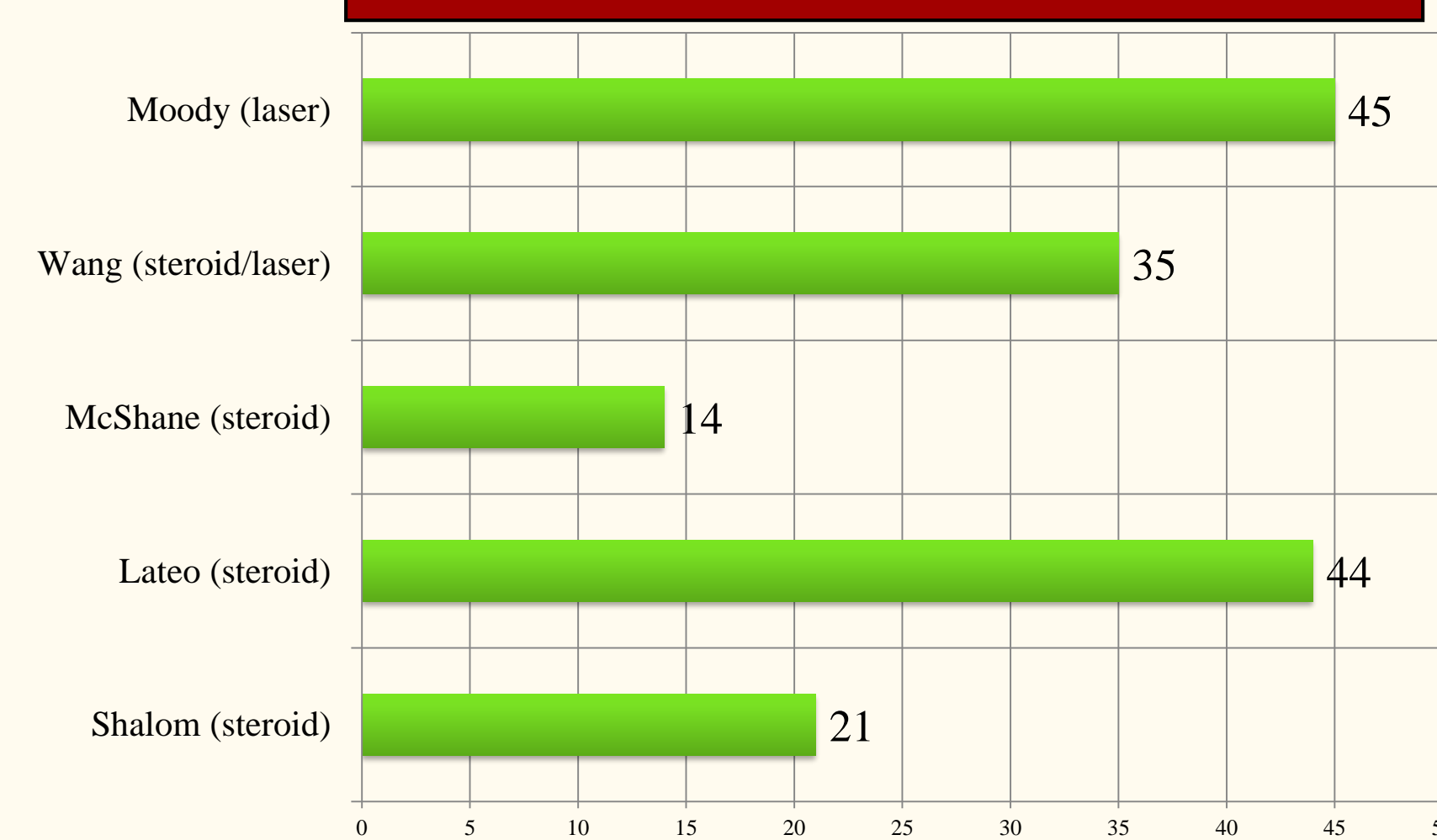
METHODS: SEARCH STRATEGY



LITERATURE FINDINGS

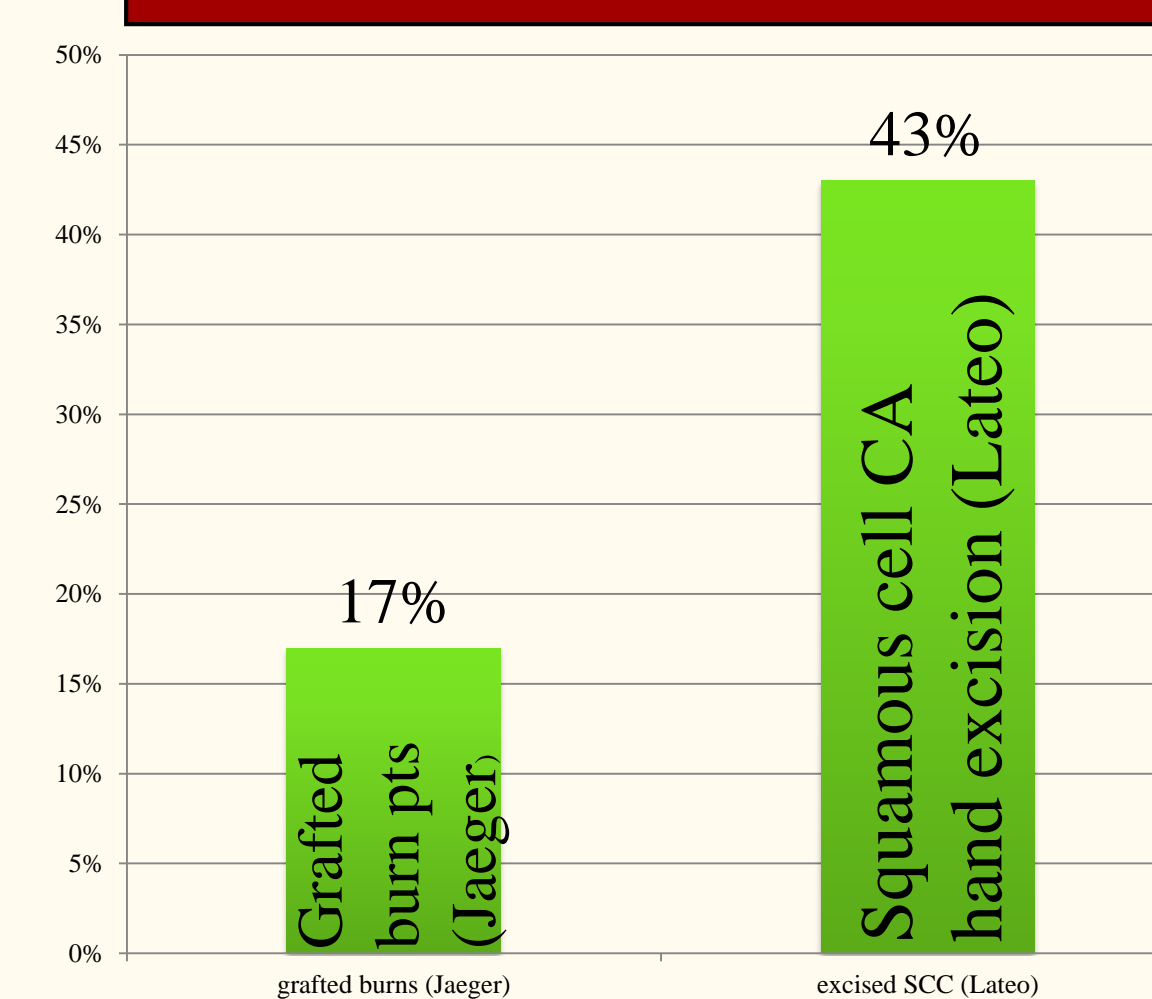
Author	Subjects/HG size	Treatment	Tx time	Outcome measure
Jaeger 2016	5 burn pts 2.4% BSA	Steroid (hydrocortisone acetate .25% diluted)	4-20 d	HG regress, no regraft, no infection
Shalom 2003	12 burn/plastic pts 50 cm ²	Steroid: 1% hydrocortisone bid	7-14 d	Complete epithelialization
Lateo 2013	12 excised hands 4.5 cm ²	Steroid: clobetasol propionate .05% daily	7-14 d	HG subsided
McShane 2012	3 wounds 1.8 cm ²	Steroid: clobetasol .05% or fluocinonide .05%	14-60 d	Healed
Wang 2007	9 MOHS surgery 23.3 cm ²	Laser + steroid: 595 nm PDL + fluocinonide .05%	7-63 d	"Healed or nearly healed"
Moody 2011	4 scalp excisions 4.9cm ²	Laser: 595 nm PDL	28-63 d	HG resolved
Harris 1994	10 chronic & acute 6.5 cm ²	Foam dressing: 3x/week	14 d	Decreased wound size 67%, HG height 88%
Johnson 2007	25 chronic & acute wounds	Steroid tape vs foam, silver foam, silver alginate	7 d	HG resolution, more quickly with steroid tape
Jewell 2007	9 grafted burns	Not stated	38 d mean	Complete healing (non-HG healed in mean 26 days, p=0.02)

DAYS TO HEALING



Average Healing Times.

HG INCIDENCE



Hypertrophic granulation incidence.

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CITED STUDY CHARACTERISTICS

- Eight case series, one comparison study
- Small series, total 89 patients in all (mean=10)
- No control group reported in any studies
- Outcome measures varied ('time to healing', 'significant improvement', '% reduction in size', 'reduced granulation height')
- No standardization for wound size
- Risk of bias due to non-random selection, no controls, many do not state study protocol

STUDY FINDINGS

1. Only steroid, laser, & foam dressing studied. Other modalities published w/o data: silver nitrate cautery, compression dssg, avoid occlusive dssg, excision & more.
2. No data comparing epithelialization with HG vs. with normal granulation
3. Median healing 14-45 days, steroid &/or laser. Insufficient data to compare tx
4. 17% incidence of HG in grafted burns, 43% incidence in excised dorsal hands

DISCUSSION POINTS

- HG incidence, impact on healing, and current practice by wound & burn providers needed
- Healing time for untreated HG is needed as baseline to evaluate treatments
- Is treatment effective if average healing time 2-6 weeks

FUTURE RESEARCH NEEDS

- Survey current practice in burn and wound care
- Compare healing of granulation vs. HG
- Compare outcomes with different treatments