Continuous Diffusion of Oxygen Adjunct Therapy to Improve Scar Reduction after Cervicotomy

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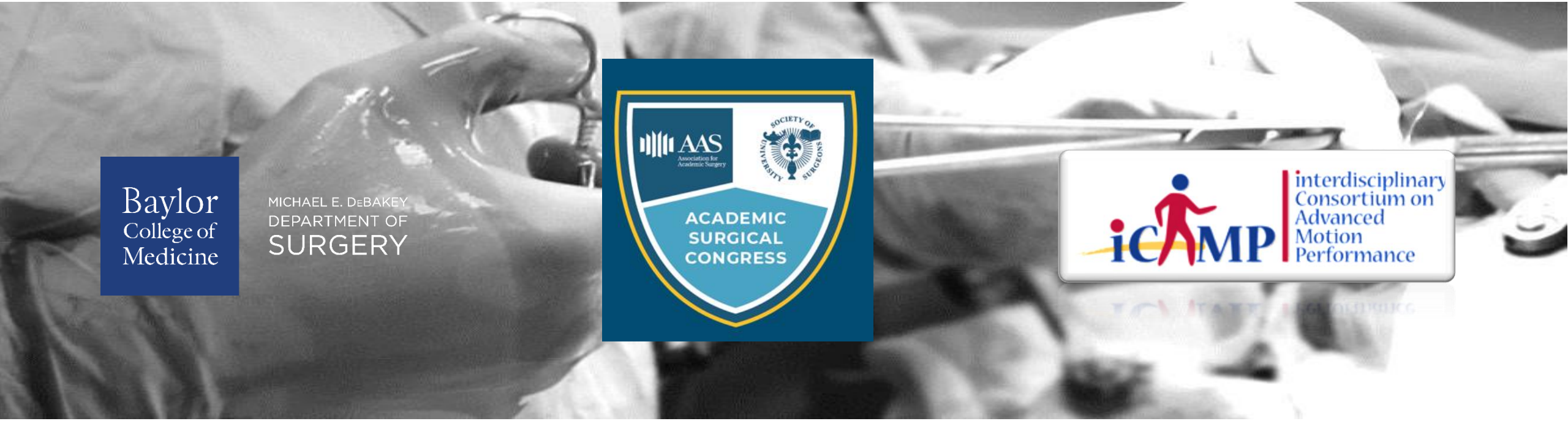

2021 Disclosure Slide

- This study was supported in part by a grant from EO2 Concepts. Sponsors did not contribute in participant recruitment nor in data analysis or interpretation of results.

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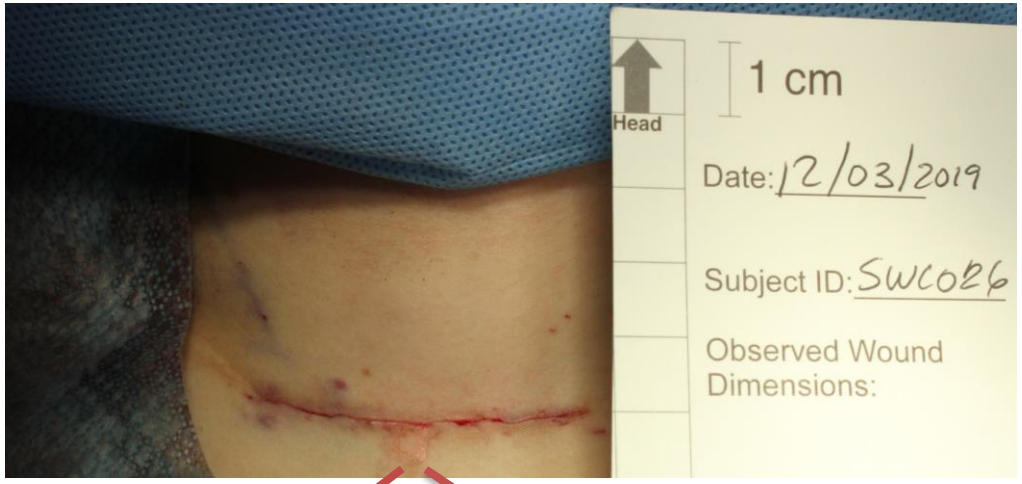
Scar formation

Significance

- Physiological and psychological concerns
- Long-term functional problems
- Infection and wound breakdown

Cervicotomy (anterior neck surgery) for hyperthyroidism



Strategies

- Intra-operative wound closing materials
- Post-operative dressing materials
- Long-term dermatologic products

Background

Cervicotomy

WOUND CLOSURE AFTER THYROID AND PARATHYROID SURGERY: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

Y.-H. Huang[1], C. Chen[1], C.-H. Lee[2,3,4], E.-W. Loh[5,6], K.-W. Tam[5,6,7,8,9]

- **Outcomes:** pain, patient satisfaction, cosmetic appearance
- **No significant differences** upon outcome evaluation

Surgery. 2013 Mar;153(3):408-12. doi: 10.1016/j.surg.2012.08.063. Epub 2012 Dec 20.

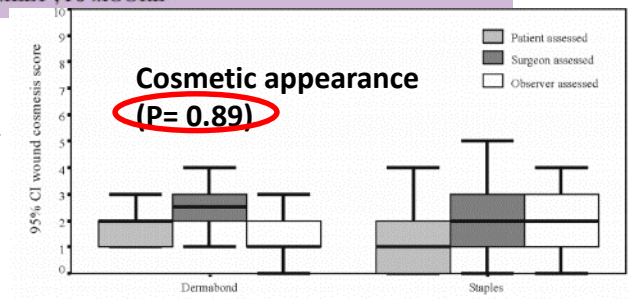
Adhesive strip wound closure after thyroidectomy/parathyroidectomy: a prospective, randomized controlled trial.

O'Leary DP[1], Clover AJ, Galbr

	Independent assessor	P *value*
Mean Hollander Cosmesis score		
Control	3.5 ± 1.6 (n = 10)	
Steri-Strip	4.2 ± 1.5 (n = 9)	.373

A blinded, randomised, controlled trial of stapled versus tissue glue closure of neck surgery incisions

DM RIDGWAY[1], F MAHMOOD[1], L MOORE[2], D BRAMLEY[1], PJ MOORE[1]



Aesthetic comparison between synthetic glue and subcuticular sutures in thyroid and parathyroid surgery: a single-blinded randomised clinical trial

Confronto del risultato estetico tra colla sintetica e suture intradermiche nella chirurgia tiroidea e paratiroidea: una sperimentazione clinica in singolo cieco

M. ALICANDRI-CIUFELLI[1], A. PICCININI[1], A. GRAMMATICA
S. TASSI[1], A. GHIDINI[1], L. IZZO[4], F.M. GIOACCHINI[1], D. MA

	Mean aesthetic results (N)		Difference (in absolute value)	p
	A (42)	B (47)		
A vs B				
10 days	1.4	2.9	1.5	0.002
3 months	3.1	2.8	0.3	0.62

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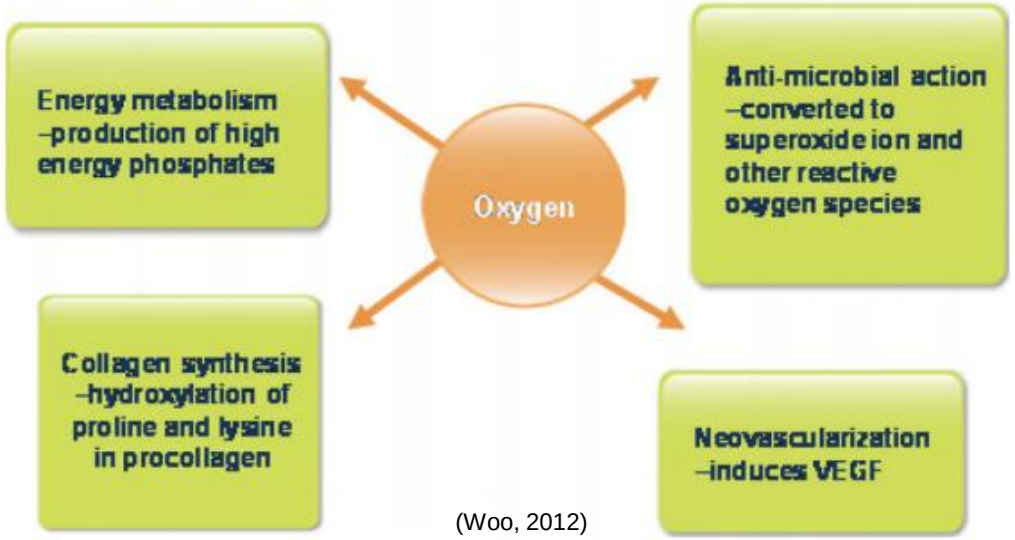
Background

Continuous Oxygen Therapy

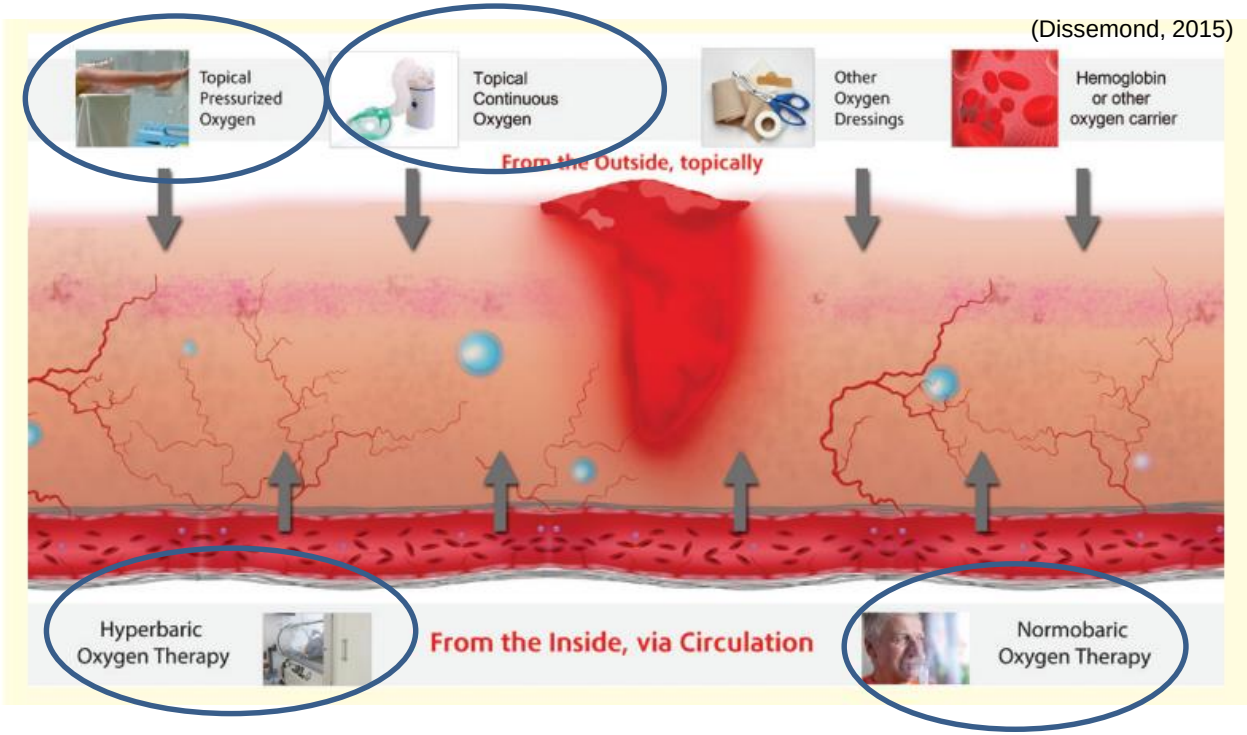
The role of oxygen in wound healing



(Woo, 2012)

Current evidence

(Dissemond, 2015)



- **Majority for lower extremity wounds**
- **Upper body has not been assessed**

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The purpose of this study is to examine the effectiveness of CDO to reduce scar length post cervicotomy

Methods

- **Design:** 4 weeks RCT

- **Participants:** 21 patients undergoing cervicotomy for thyroid or parathyroid disease, 5 lost to follow up, leading to **a total of 16 patients.**
- **Groups:**
  - **Intervention** (n=9): CDO device
  - **Control** (n=7): standard of care

- **Intervention:**
  - **Treatment location:** over neck incision cite
  - **Intensity:** 5 ml/hr in a pure continuous flow
  - **Frequency:** 24 hrs/7 days per week
  - **Duration of therapy:** 4 weeks

Primary outcomes:

- >10% scar reduction
- Change in wound size

Participant's characteristics	Control (n = 7)	Intervention (n = 9)	p-value
Age (years)	44.3 ± 6.6	64.0 ± 2.6	0.024
Female (n)	7 (100)	7 (77.7)	0.47
BMI (kg/m^2)	32.7 ± 2.9	32.5 ± 2.6	0.96
Thyroid disease (n)	4 (57.1)	3 (33.3)	0.61
Parathyroid disease	3 (42.8)	6 (66.7)	0.61
Diabetes	2 (22.2)	5 (41.7)	0.36
Hypertension	4 (57.1)	6 (66.7)	1
hyperlipidemia	2 (28.5)	3 (33.3)	1
Daily prescribed meds	5 ± 4.5	6.5 ± 3.5	0.95
Frail	1 (14.2)	2 (22.2)	1
Incision length, cm	5.2 ± 0.6	4.4 ± 0.4	0.31
Wound SatO2, %	59.3 ± 3.1	60.6 ± 2.1	0.73
Values are presented as mean ± standard deviation or n (%).			

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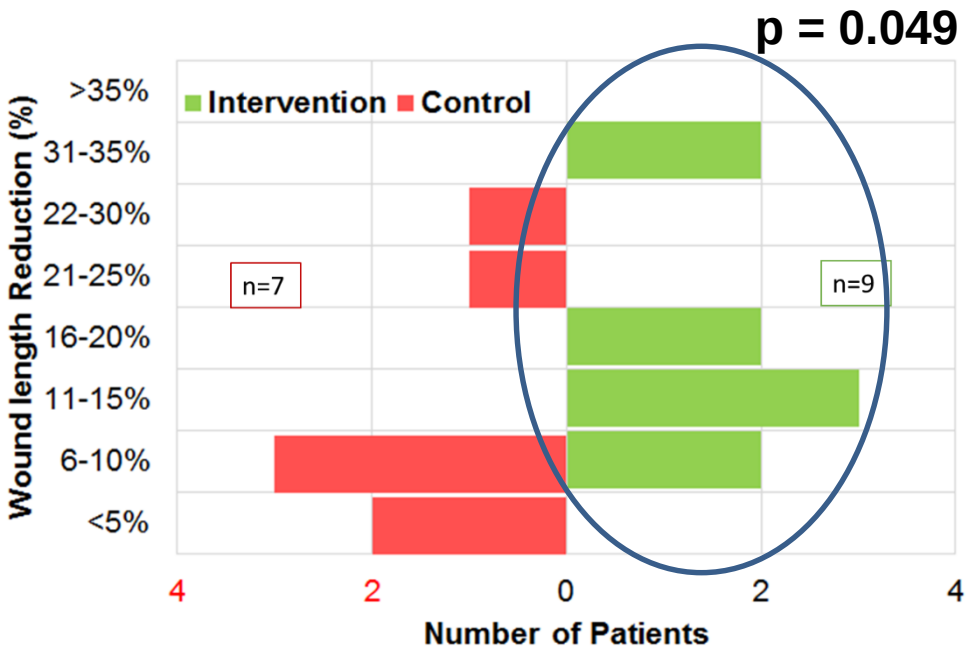
Results

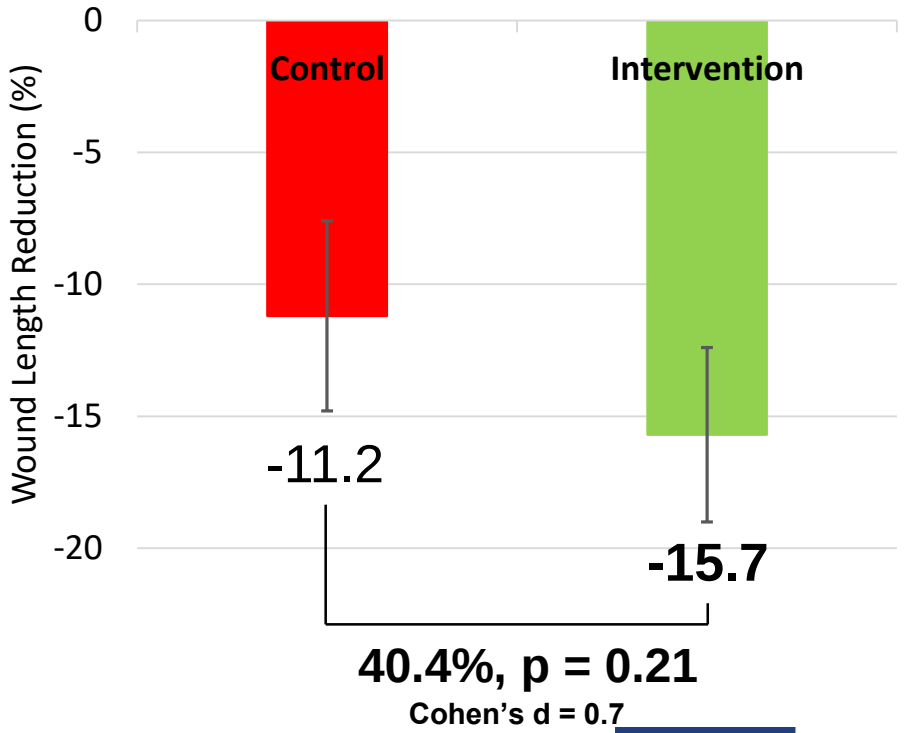
Primary Outcomes

>10% scar length reduction



➢At 4 weeks, **77.7%** of IG achieved more than 10% of scar reduction compared to the CG (28.5%).

Change in wound size



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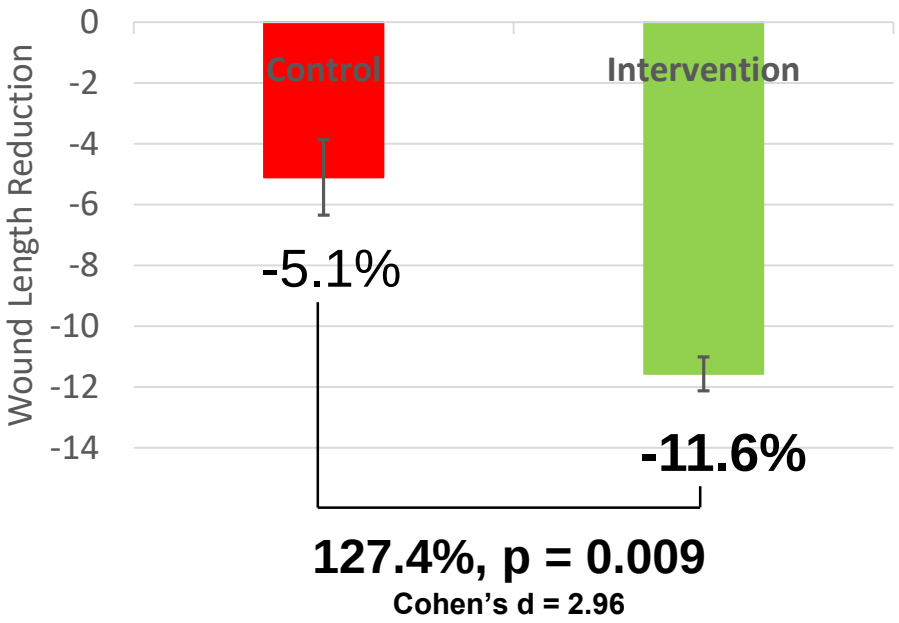
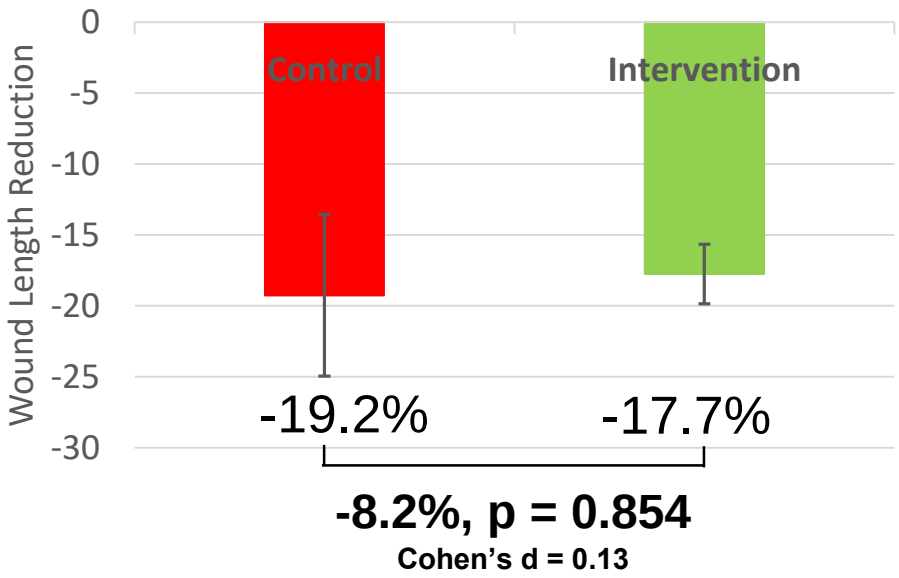
Results

Sub-analysis
Scar reduction

Thyroid



Parathyroid



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Results

Hyperthyroidism cases

Intervention case:

Total thyroidectomy

61 years old female

Scar reduction

-14.5%

Control case:

Total thyroidectomy

30 years old female

Scar reduction

-5.4%

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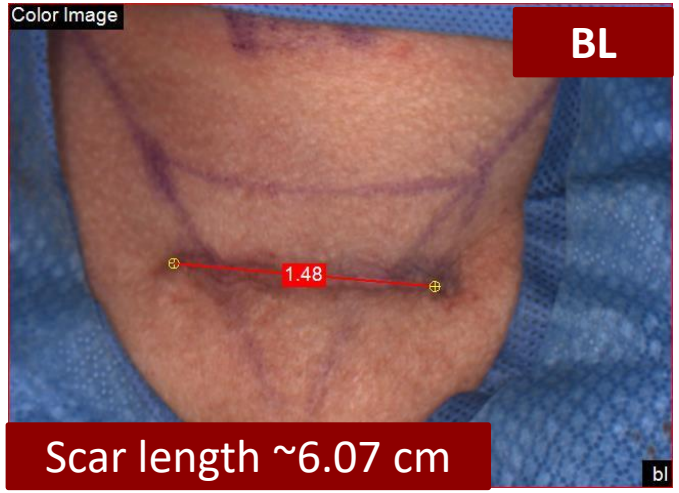
Results

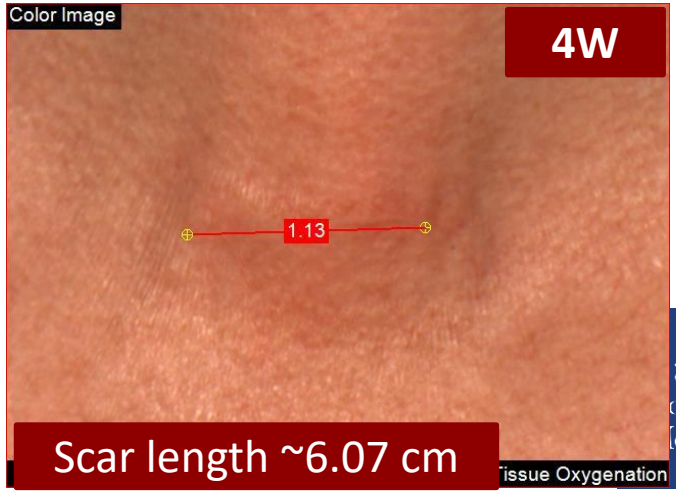
Hyperparathyroidism cases

Intervention case:
Partial parathyroidectomy
45 years old female

Scar reduction
-16%

Control case:
Partial parathyroidectomy
65 years old female





Scar reduction
-28%

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Conclusions

- This is the first study to assess scar reduction with the use of CDO adjunct therapy after cervicotomy.
- Results suggest a trend that advanced dressing using CDO may improve wound healing post cervicotomy including better outcomes for scar visualization.
- We speculate that reduced scar in the IG is due to early oxygenation and higher tissue moisture in response to CDO, which are known factors to accelerate healing.
- A larger sample is required to validate this observation.

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Thank you

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Additional outcomes

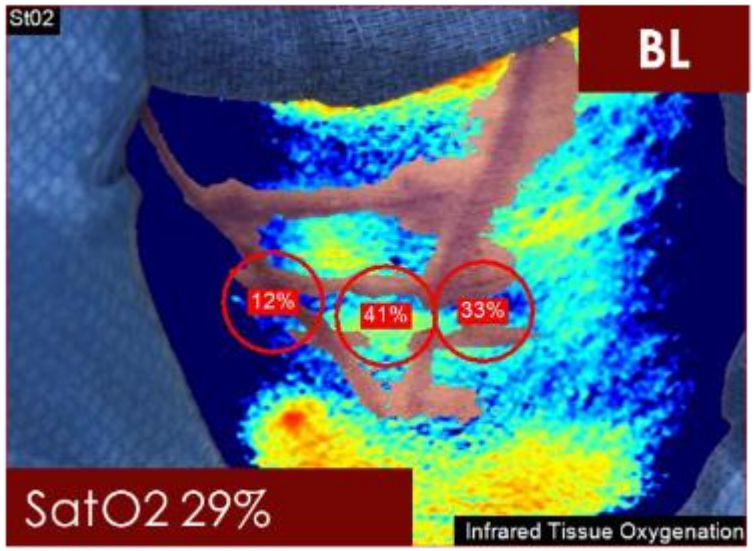
	SATO2 change %				
	IG	**CG**	**%**	**P-value**	**Cohen‘s d**
Overall	2.7 ± 5.8	11 ± 4.7	-75.4	0.29	0.55
Thyroid	9.6 ± 11.7	7.2 ± 2.6	33.33	0.82	0.17
Parathyroid	-0.7 ± 6.9	16.1 ± 11.0	-104.34	0.21	0.96

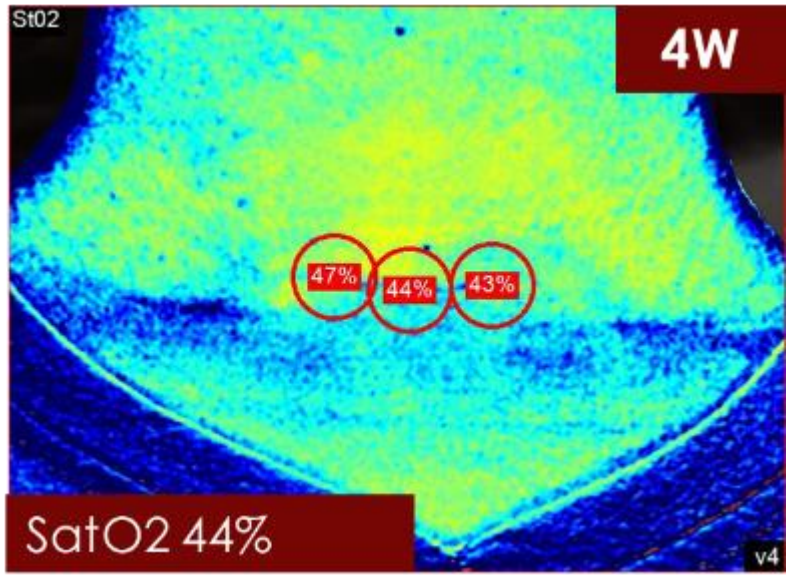
Intervention cases:

NIR Spectroscopy

(Additional slide)

Procedure: Parathyroidectomy
-**Age**: 45

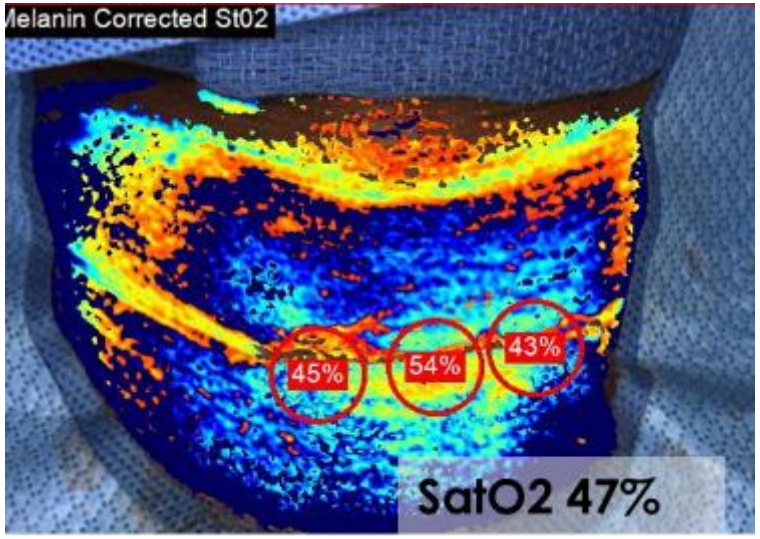


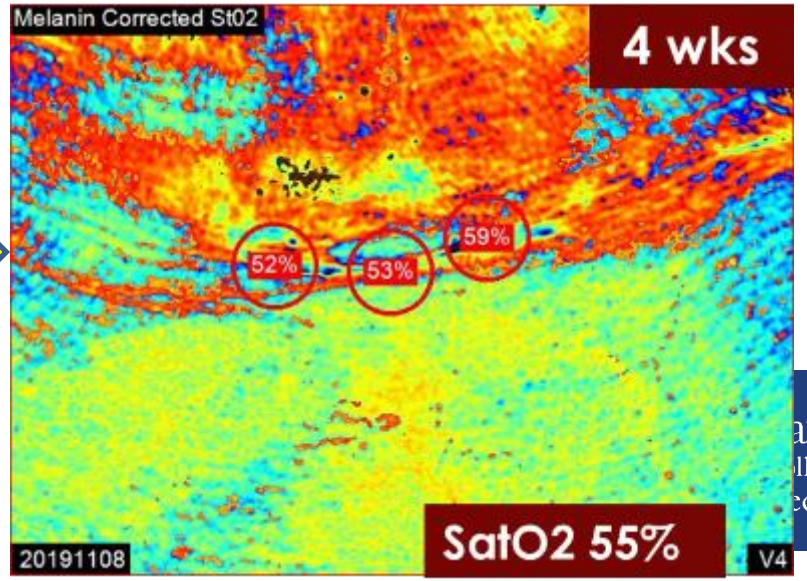


SatO2 Increase

%52

Procedure: Parathyroidectomy
-Age: 71





SatO2 Increase

%14

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