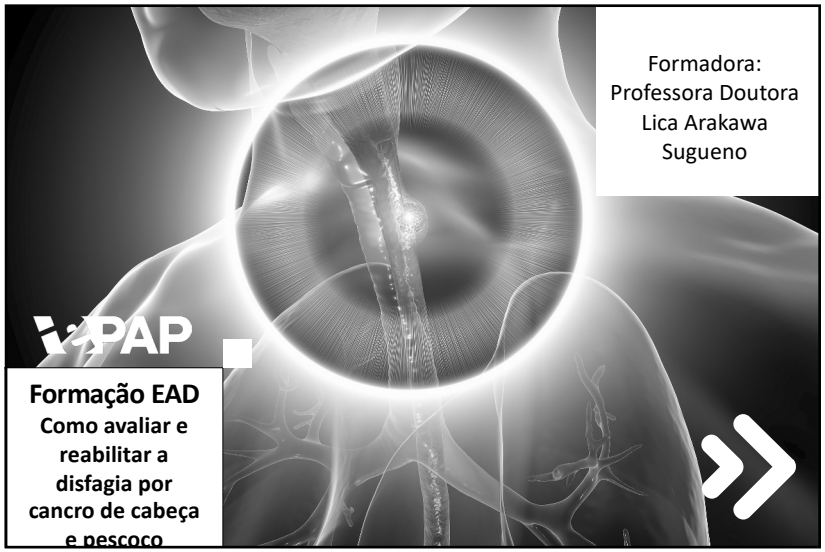


1

Conteúdo

A. **Breve introdução com panorama atual do cancro de cabeça e pescoço e tipos de tratamento oncológico**

B. **Manifestações funcionais nas regiões de cabeça e pescoço e tratamentos que mais causam disfagia**
   1. Cancro de boca e orofaringe
   2. Cancro de laringe
   3. Cancro de tireoide

C. **Propostas de intervenção**
   1. Critérios de intervenção e estratégias no pós operatório recente
   2. Programas profiláticos antes, durante e após radioquimioterapia
   3. Terapia para disfagia após cirurgia e radioterapia

2

3

Estratégias de intervenção

- Foco no objetivo global de segurança e eficiência da deglutição
- Definição dos momentos de intervenção: antes do tratamento oncológico, durante radioquimioterapia, no pós operatório recente e no período tardio de cirurgia e radioterapia
- Identificação fase aguda e crônica das manifestações
- Base nos princípios de terapia neuromuscular, mesmo na disfagia mecânica
- Definição dos alvos terapêuticos: prevenção, amplitude de movimento, força, resistência, sensibilidade, coordenação/habilidade, etc

4

Abordado anteriormente

Propostas imediatas e estratégias para resultados em longo prazo

Abordado anteriormente

Manejo no pós operatório recente

Quais estratégias são profiláticas e quando iniciá-las

Estratégias para adaptação imediata?

Exercícios mudam a função no longo prazo?

5

Princípios de tratamento

- Emergenciais/curto prazo ou adaptações em casos de prognóstico limitado
  - Uso de espessantes
  - Seleção de consistências seguras
  - Adequação de utensílio e volume por oferta
  - Mudanças posturais
  - Manobras de proteção de via aérea
  - Indicação da válvula fonatória
  - Retiradas de estímulos que atrapalham

Especialmente na fase aguda

- Longo prazo/duradouras
  - Manobras – algumas funcionam como tratamento
  - Exercícios

6

Estratégias que dependem de comando Ação voluntária

- Estratégias indicadas para mudar o tempo ou a força de movimentos específicos de deglutição
- Requer compreensão, capacidade de execução e habilidade na coordenação
- Apneia
- Mendelsohn, Masako (também funcionam como exercícios)
- Deglutição com esforço, deglutições múltiplas
- Manobra supraglótica e super-supraglótica

7

Deglutição com esforço

- Aumentar a pressão intraoral com força de língua?
  - Engolir pressionando a língua contra o céu da boca com máximo de contato

Huckabee & Steele, 2006

- Aumentar ação esfinctérica laríngea?
  - Mão contra mão
  - Empurrar a cadeira para baixo
- Aumentar ação da muscultatura extrínseca da laringe?
  - Mãos em gancho
  - Puxar a cadeira para cima

8

Estratégias que usam estímulo periférico para modular comportamento da deglutição

- Técnicas de postura e posição
- Modificação de dieta (volume, sabor, consistência)
- Modificação na oferta (utensílio, ritmo, velocidade)
- Bandagem

Takasaki et al., 2010

9

Eficaz em até 81% dos casos de mecânica

1.4

Takasaki et al., 2010; Kawai et al., 1999; Logemann et al., 1994; Omae et al., 1997

10

Cabeça para trás

Takasaki et al., 2010; Kawai et al., 1999; Logemann et al., 1994; Omae et al., 1997

11

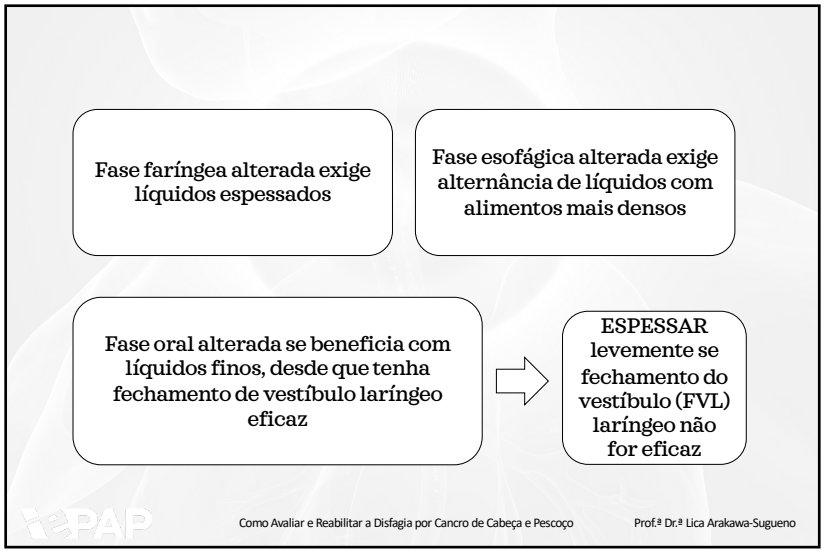
Modificação de dieta

- Alterar a viscosidade de líquidos
- Tornar alimentos sólidos mais macios, cortar, picar, moer, triturar ou tornar purê
- Usar sabor ou temperatura como um facilitador de estímulo sensorial do bolo alimentar
- Identificar preferências do paciente
- Usar utensílios facilitadores de volume, captação e auxílio à gravidade
- Discutir todas as sugestões relacionadas aos alimentos seguros com nutricionistas

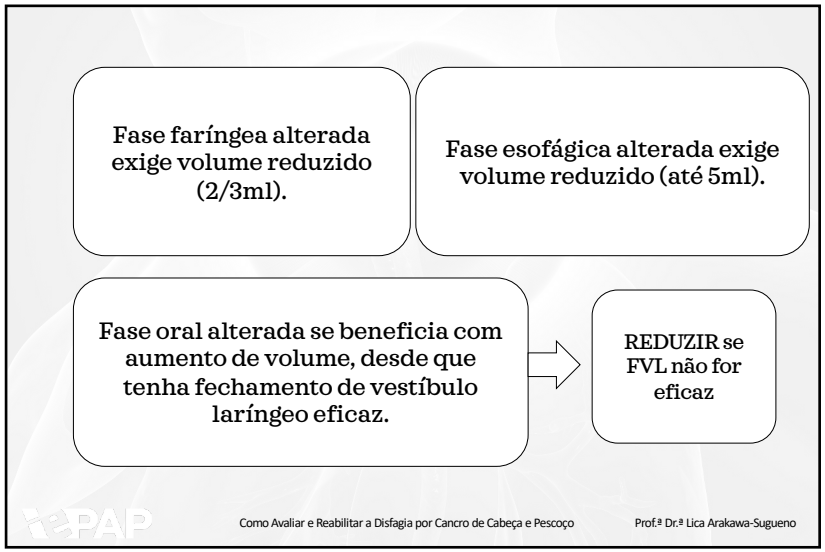
12


IDDSI
International Dysphagia Diet Standardisation Initiative
Standardising dysphagia diet terminology to improve safety.
FOODS
REGULAR
SOFT
MINCED & MOIST
PUREED
LIQUIDIZED
EXTREMELY THICK
MODERATELY THICK
MILDLY THICK
SLIGHTLY THICK
THIN
DRINKS
Como Avaliar e Reabilitar a Disfagia por Cancro de Cabeça e Pescoço
Prof.ª Dr.ª Lica Arakawa-Sugueno

13


Fase faríngea alterada exige líquidos espessados
Fase esofágica alterada exige alternância de líquidos com alimentos mais densos
Fase oral alterada se beneficia com líquidos finos, desde que tenha fechamento de vestíbulo laríngeo eficaz
ESPESSAR levemente se fechamento do vestíbulo (FVL) laríngeo não for eficaz
Como Avaliar e Reabilitar a Disfagia por Cancro de Cabeça e Pescoço
Prof.ª Dr.ª Lica Arakawa-Sugueno

14


Fase faríngea alterada exige volume reduzido (2/3ml).
Fase esofágica alterada exige volume reduzido (até 5ml).
Fase oral alterada se beneficia com aumento de volume, desde que tenha fechamento de vestíbulo laríngeo eficaz.
REDUZIR se FVL não for eficaz
Como Avaliar e Reabilitar a Disfagia por Cancro de Cabeça e Pescoço
Prof.ª Dr.ª Lica Arakawa-Sugueno

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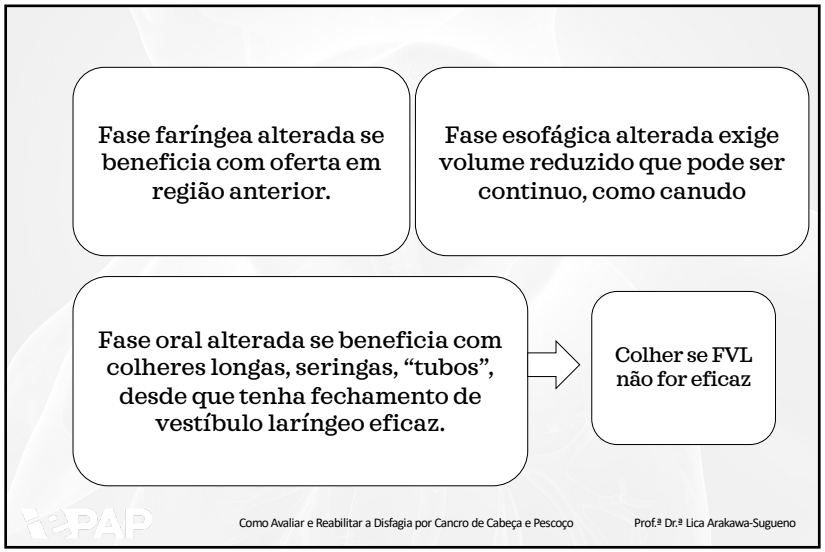
Fase faríngea alterada se beneficia com oferta em região anterior.
Fase esofágica alterada exige volume reduzido que pode ser continuo, como canudo
Fase oral alterada se beneficia com colheres longas, seringas, "tubos", desde que tenha fechamento de vestíbulo laríngeo eficaz.
Colher se FVL não for eficaz
Como Avaliar e Reabilitar a Disfagia por Cancro de Cabeça e Pescoço
Prof.ª Dr.ª Lica Arakawa-Sugueno

16

Sabor

Ardor, refluxo

Memória afetiva

- O sabor ácido estimula os quimio e mecanorreceptores e reduz o tempo de duração da deglutição, o trânsito oral, o tempo de trânsito faríngeo e aumenta a eficiência da deglutição.

Logemann et al., 1995.

- O sabor não modifica o tempo de duração da apnéia.

Butler et al., 1995.

17

Examination of swallowing maneuver training and transfer of practiced behaviors to laryngeal vestibule kinematics in functional swallowing of healthy adults

Physiology & Behavior 174 (2017) 155–161

Renata Guedes [a,b], Alba Azola [c], Phoebe Macrae [d], Kirstyn Sunday [a], Veerley Mejia [a], Alicia Vose [a], Ianessa A. Humbert [a,*]

- 69 adultos saudáveis treinaram manobra volitiva de FVL foram maior tempo possível (long-hold) ou por 2s (short hold)
- Deglutição antes e após FVL
- Nossos achados sugerem que o treinamento em manobras de deglutição tem o potencial de induzir a transferência do que foi praticado para o comportamento funcional da deglutição, embora nem todos os comportamentos praticados possam ser generalizados.
- Esses achados são significativos e devem ser testados em indivíduos com disfagia.

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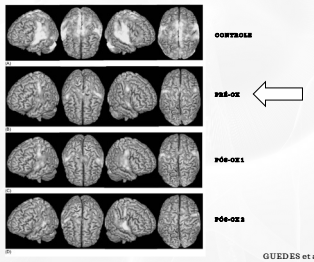
Ativação cortical relacionada à deglutição

GLOSSECTOMIA

Slide do @keepswallowing



GUEDES et al. 2016

19

Uso de Biofeedback

- Biofeedback incorpora a capacidade do paciente de detectar mudanças e auxilia no tratamento de distúrbios de alimentação ou de deglutição.
- Por exemplo, os pacientes com habilidades cognitivas suficientes podem ser ensinados a interpretar a informação visual fornecida por essas avaliações (por exemplo, eletromiografia de superfície, ultra-som, FEES) e fazer alterações fisiológicas durante o processo de deglutição.

20

Evidence-based systematic review: Oropharyngeal dysphagia behavioral treatments. Part IV—Impact of dysphagia treatment on individuals' postcancer treatments

Daniel McCabe, DMA;[1] John Ashford, PhD;[2] Karen Wheeler-Hegland, PhD;[3] Tobi Frymark, MA;[4*] Robert Mullen, MPH;[4] Nan Musson, MA;[5] Carol Smith Hammond, PhD;[5,6] Tracy Schooling, MA[4]

JRRD Volume 46, Number 2, 2009 Pages 205–214
Journal of Rehabilitation Research & Development

Table 2.
Findings of clinical question 1: What is the effectiveness of dysphagia behavioral interventions (i.e., side-lying, chin-tuck, head-rotation postures, effortful swallow, Mendelsohn, supraglottic swallow, or super-supraglottic swallow maneuvers) on swallowing physiology for populations with a structural disorder (i.e., head and neck cancer)?

Study	Intervention	Outcome Measure	Effect Size
Lazarus et al., 1993 [1]	Mendelsohn maneuver	Duration of BOT to PPW contact	NR
	Supraglottic swallow maneuver	Duration of laryngeal elevation	
	Super-supraglottic swallow maneuver	Duration of glottic closure	
		Duration of UES opening	
		Distance of BOT movement	
		Distance of laryngeal elevation	
		Distance of UES opening	
		% of aspiration	
Lazarus, et al., 2002 [2]	Effortful swallow maneuver	% of residual	NR
		Timing of bolus movement	
		Distance of structural movements	
		Tongue manometry	
		Maximum pressure tongue	
Lazarus, et al., 2002 [3]	Effortful swallow maneuver	BOT to PPW pressure	1.40
		Duration of BOT to PPW contact	3.70
		% of pharyngeal residual	1.00
	Super-supraglottic swallow maneuver	BOT to PPW pressure	1.70
		Duration of BOT to PPW contact	3.00
		% of pharyngeal residual	0.60
	Mendelsohn maneuver	BOT to PPW pressure	0.30
		Duration of BOT to PPW contact	2.10
		% of pharyngeal residual	1.00
Lewin et al., 2001 [4]	Chin-tuck posture	Aspiration	NR
Logemann et al., 1997 [5]	Super-supraglottic swallow maneuver	% of oral residual	0.58
		% of pharyngeal residual	0.30
		Laryngeal closure	0.98
		PPW movement	1.38
		Duration of BOT to PPW contact	0.08

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Perspectives of the ASHA Special Interest Groups
SIG 13, Vol. 3(Part 1), 2018. Copyright © 2018 American Speech-Language-Hearing Association

The Ice Chip Protocol: A Description of the Protocol and Case Reports

Jessica M. Pisegna
Department of Otolaryngology, Boston Medical Center
Boston, MA
Speech-Language Pathology Sciences, Boston University School of Medicine
Boston, MA
Susan E. Langmore
Department of Otolaryngology-Head & Neck Surgery, Boston University Medical Center
Boston, MA

Clinical Investigation: Head and Neck Cancer

"Pharyngocise": Randomized Controlled Trial of Preventative Exercises to Maintain Muscle Structure and Swallowing Function During Head-and-Neck Chemoradiotherapy

Giselle Carnaby-Mann, M.P.H., Ph.D.,* Michael A. Crary, Ph.D.,† Ilona Schmalfuss, M.D.,‡ and Robert Amdur, M.D.§

Head and neck lymphedema management: Evaluation of a therapy program

Amanda Pigott BOccThy, PhD[1] | Jodie Nixon BAppSc (OccThy)[1] | Jennifer Fleming BOccThy, PhD[2] | Sandro Porceddu MD, FRANZCR[3]

22

Tongue Strength and Exercise in Healthy Individuals and in Head and Neck Cancer Patients

2006

Cathy Lazarus, Ph.D., BRS-S[1]

ABSTRACT

The tongue plays a critical role in bolus propulsion through the oral cavity and pharynx. This manuscript reviews the types of lingual impairment and overall oropharyngeal swallowing impairment present after treatment for head and neck cancer; specifically, surgery and primary chemoradiotherapy. Oral tongue impairment in surgically treated patients can include reduced range of motion, reduced control, and reduced ability to manipulate, seal, and propel a bolus into the pharynx. Tongue base impairment can result in reduced bolus clearance through the pharynx, resulting in pharyngeal residue and aspiration. The biologic effects of radiotherapy are described, with tissue fibrosis being a primary contributor to development of oropharyngeal swallow disorders. In patients treated with primary chemoradiotherapy, lingual strength has been found to be reduced, as has oral and pharyngeal structural movement during the swallow. The effects of skeletal muscle strengthening programs on muscle physiology are discussed, as are the effects of tongue strengthening exercise programs on tongue strength and swallowing. Future research needs are addressed.

KEYWORDS: Tongue strength, head and neck cancer, swallowing

Learning Outcomes: As a result of this activity, the reader will be able to identify how tongue function and swallowing are impaired in the treated head and neck cancer population.

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AJSLP
Review Article

A Systematic Review of Isometric Lingual Strength-Training Programs in Adults With and Without Dysphagia

Victoria S. McKenna,[a] Bin Zhang,[b] Morgan B. Haines,[a] and Lisa N. Kelchner[a]

- Exercícios isométricos aumentam a força lingual isométrica e melhoram a pressão lingual máxima em adultos saudáveis e indivíduos com disfagia.
- Não há suporte na literatura para associar o treino isométrico de língua com mudanças diretas em outros parâmetros de deglutição orofaríngea.
- Em pacientes com câncer de cabeça e pescoço, não houve evidência de ganho de força e aumento de pressão de língua.

American Journal of Speech-Language Pathology • 1–16 • Copyright © 2017 American Speech-Language-Hearing Association

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Van Nuffelen et al. Trials (2015) 16:395
DOI: 10.1186/s13063-015-0889-5

TRIALS

STUDY PROTOCOL Open Access

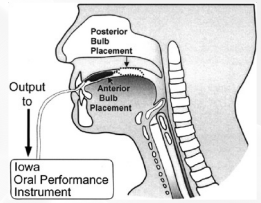
Study protocol for a randomized controlled trial: tongue strengthening exercises in head and neck cancer patients, does exercise load matter?

Gwen Van Nuffelen[1,2*], Leen Van den Steen[1], Olivier Vanderveken[1,2], Pol Specenier[3], Carl Van Laer[1], Diane Van Rompaey[1], Cindy Guns[1], Steven Marien[1], Marc Peeters[3,4], Paul Van de Heyning[1,2], Jan Vanderwegen[4,5] and Marc De Bodt[1,2,6]

- Piloto: 51 pacientes com disfagia relacionada à redução de força de língua após tratamento de RDTQT para CCP
- Este ensaio clínico randomizado que investiga o efeito de três protocolos de exercícios de fortalecimento da língua, com diferentes graus de carga de exercício (60, 80 ou 100%)
- 120 repetições ao dia; 3 x semana; 8 semanas
  - Ajuste de carga a cada 2 semanas
- Avaliação pré e pós terapia: pressão de língua, FEES, QV

25

- Sessão
  - 120 pressões de língua – 12 x 5 repetições com descanso de 60s
    - 60 pressões na região anterior
    - 60 pressões na região posterior
    - A cada sessão, alterna-se o início entre região anterior e posterior



Van Nuffelen et al. Trials (2015) 16:395
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TRIALS

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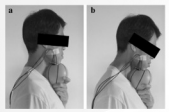
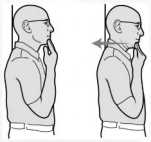
CTAR – chin tuck against resistance



Bola de 12cm de diâmetro

neckline



ISO-SED
Swallowing exercise device

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Journal of Cancer Science and Clinical Oncology
Volume 2 | Issue 2
ISSN: 2394-6520

Research Article Open Access

Shaker Exercise Rehabilitation in Head and Neck Cancer and Stroke Patients with Dysphagia - A Pilot Study

Rudberg I[1], Bergquist H[1], Andersson M[2], Dotevall H[1], Horváth S[2] and Finizia C[1]

Figure 1: The Shaker exercise
A speech language pathologist is demonstrating how to perform the Shaker exercise, lifting her head from the supine position so that she is able to look at her toes without raising her shoulders. Used with permission.

1 série de 3 x 1 min + 30 repetições seguidas

3 séries ao dia com intervalos mínimos de 30min

8 semanas

Os pacientes CCP dessa pequena amostra conseguiram executar o programa e tiveram benefícios segundo MDADI, EORTC-OLO HN35, FEES

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Journal of Cancer Science and Clinical Oncology
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Research Article Open Access

Shaker Exercise Rehabilitation in Head and Neck Cancer and Stroke Patients with Dysphagia - A Pilot Study

Rudberg I[1], Bergquist H[1], Andersson M[2], Dotevall H[1], Horváth S[2] and Finizia C[1]

Patient HNC	Gender	Age	Disorder	TNM /stage	Months after CRT at inclusion	ACE 27
1	male	50	tonsil cancer	T4N3M0/IV	26	0
2	female	57	tonsil cancer	T1N2M0/IVa	10	0
3	male	67	tonsil cancer	T3N1cM0/IV	68	2
4	female	68	base of tongue cancer	T1N2aM0/IVa	14	1
5	male	68	tonsil cancer	T2N2M0/IVb	30	0
6	male	81	tonsil cancer	T3N3M0/IVa	28	2

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Expiratory Muscle Strength Training for Radiation-Associated Aspiration after Head and Neck Cancer: A Case-Series

Katherine A. Hutcheson, PhD[1], Martha P. Barrow, MPH[1], Emily K. Plowman, PhD[2], Stephen Y. Lai, MD, PhD[1,3], Clifton David Fuller, MD, PhD[4], Denise A. Barringer, MS[1], George Eapen, MD[5], Yiqun Wang, MA[1], Rachel Hubbard, BS[1], Sarah K. Jimenez, MS[1], Leila G. Little, MS[1], and Jan S. Lewin, PhD[1]

O estudo sugere que o fortalecimento expiratório pode ser um novo alvo terapêutico para melhorar proteção das vias aéreas nessa população.

Os dados preliminares sugerem que a melhoria na geração de pressão expiratória após o EMST oferece mais segurança das vias aéreas e na habilidades de deglutição em sobreviventes com aspiração crônica associada à radiação.

DIGEST, MDADI, PSSHN

1 série de 5 sopros fortes e curtos
5 séries ao dia = 25
5 dias por semana semana
8 semanas

Não há menção dos parâmetros utilizados para definição da carga

3 de 26 pac Não completaram as 8 semanas
1 Paciente com tontura
2 Pacientes com complicação pulmonar (pneumonia aspirativa)

Laryngoscope. 2018 May ; 128(5): 1044–1051. doi:10.1002/lary.26845.

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Expiratory Muscle Strength Training in patients After Total Laryngectomy; A Feasibility Pilot Study

Annals of Otology, Rhinology & Laryngology 1–9
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DOI: 10.1177/0003489420913889
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Klaske E. van Sluis, MSc[1,2†], Anne F. Kornman, MSc[1†], Wim G. Groen, PhD[3], Prof. Michiel W.M. van den Brekel, MD, PhD[1,2,4], Lisette van der Molen, PhD[1], Bari Hoffman-Ruddy, PhD[5], and Martijn M. Stuiver, PhD[1,6,7]

- O objetivo principal do estudo foi avaliar a viabilidade, segurança e conformidade com o programa EMST.
- Os efeitos da EMST na função pulmonar, esforço físico, fadiga e funcionamento vocal foram avaliados com manometria, espirometria, teste de exercício cardiopulmonar (TECP), gravações de voz e questionários.

Figure 1. EMST150 connected to a baseplate with the adapter and voice prosthesis plug present.

Figure 2. EMST150 during practice, connected to the baseplate attached to the tracheostoma. The index finger is used to occlude the opening on top during forced exhalation.

Table 1. Overview of the Assessed Outcome Measures per Time Point, Visualization of Period A and B Over Time.

	Wk 0	Wk 1	Wk2	Wk 3	Wk 4	Wk 8
	Period A					Period B
Manometry—MEP	X	X	X	X	X	X
Spirometry—PEF	X	X	X	X	X	X
Spirometry—VC, FEV1	X				X	
CPET—VE/VCO$_2$, Borg exertion-, Borg dyspnea scale	X				X	
Voice assessment—Vocal range (Hz and dB), MPT	X				X	X
Short fatigue questionnaire[33]	X				X	X
Clinical COPD Questionnaire[34]	X				X	X
Voice Handicap Index-10[32]	X				X	X

Abbreviations: CPET, Cardio Pulmonary Exercise Testing; FEV1, Forced Expiratory Volume in the first second; MEP, Maximum Expiratory Pressure; MPT, Maximum Phonation Time; PEF, Peak Expiratory Flow; VC, Vital Capacity.

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The Safety and Efficacy of Expiratory Muscle Strength Training for Rehabilitation After Supracricoid Partial Laryngectomy: A Pilot Investigation

Annals of Otology, Rhinology & Laryngology 1–8
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DOI: 10.1177/0003489418812901
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Andrew D. Palmer, PhD[1], Rachel K. Bolognone, MS[1], Skipp Thomsen, MS[1], Deanna Britton, PhD[1], Joshua Schindler, MD[1], and Donna J. Graville, PhD[1]

Table 3. Comparison of Pre- and Posttreatment Scores on Self-Report Measures.

	EAT-10		V-RQOL		CSI		DI	
Patient	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	13	11	77.78	75.00	9	7	2	0
2	19	17	35.00	27.50	18	18	21	18
3	15	24	75.00	55.00	6	10	9	2
4	2	2	65.00	62.50	5	0	3	1
5	3	5	67.50	77.50	2	2	0	1
6	4	8	80.00	85.00	4	3	2	1

Abbreviations: CSI, Cough Severity Index; DI, Dyspnea Index; EAT-10, Eating Assessment Tool; V-RQOL, Voice-Related Quality of Life.

- Objetivo: Determinar segurança e eficácia de um programa de tratamento de 4 semanas.
- 6 participantes LPH-CHEP
  - Clinicamente estáveis
  - Sem contraindicação para uso do EMST
- Os efeitos colaterais do tratamento foram pouco frequentes e incluíram tontura, inflamação muscular e fadiga vocal.
- Aumento médio de 21% no pico de fluxo da tosse (de 371,67 para 451,33 L / min) e uma diminuição de 38% no Índice de Dispneia (de 6,17 para 3,83).
- A maioria dos pacientes achou o uso fácil.

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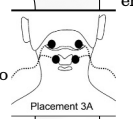
Annals of Otology, Rhinology & Laryngology 117(4):279-287.

Adjunctive Neuromuscular Electrical Stimulation for Treatment-Refractory Dysphagia

Giselle D. Carnaby-Mann, MPH, PhD; Michael A. Crary, PhD

- 60min/dia
- 5 x semana
- Máximo de 15 sessões (suspender se atingir FOIS 6)
- EENM (FES, freq80Hz, duração de pulso de 700µs - VitalStim model 5900, Chattanooga Group) combinada com atividades funcionais de deglutição.
- Progressão de volumes e consistências de oferta
- Biofeedback com EMG superfície



Monitoramento de desempenho

Registro de tentativas de deglutição boas e malsucedidas em 5 a 10 deglutições sequenciais.

Bem sucedidas: ausência de expectoração, tosse, pigarro, alteração na frequência respiratória.

Deglutições malsucedidas em a 3 de 5 tentativas de deglutição determinavam retrocesso na hierarquia alimentar.

MDTP - McNeill Dysphagia Therapy Program
Michael Crary & Giselle Carnaby

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ORIGINAL ARTICLE

McNeill Dysphagia Therapy Program: A Case-Control Study

Giselle D. Carnaby-Mann, MPH, PhD, Michael A. Crary, PhD

Arch Phys Med Rehabil Vol 91, May 2010

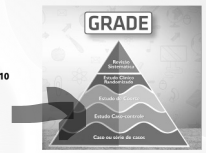

Table 1: Group Characteristics

Variable	Case	Control	Significance
Sex (M:F)	2:6	4:12	Matched
Diagnosis			matched
H/N ca	6	12	
Neurologic	2	4	
Duration of dysphagia (mo)	45.1 (25.9)	13.87 (14.6)	$P<.002$*
Prior failed therapy (count)	8	5	$P<.001$†
MASA score, mean ± SD	156.6±13.5	157.9±10.6	NS
FOIS, median (range)	2 (1–4)	2 (1–4)	NS
Presence of gastrostomy tube (PEG-tube)	75% (6/8)	81% (13/16)	NS
Presence of aspiration	75% (6/8)	68% (11/16)	NS
Total no. of sessions, mean ± SD	12.37±2	19.68±3	NS

Abbreviations: F, female; H/N ca, head/neck cancer; M, male; MASA, Mann Assessment of Swallowing Ability; NS, not significant.
*Mann-Whitney *U* test.
†Chi-square test.

5ml a 10ml de líquido fino, liquido espessado, pudim, bolacha cream cracker

Table 3: Treatment Outcomes

Outcome Measure	Case	Control	Significance
MASA score (mean ± SD)	175.6 (16.9)	164.2 (11.2)	$P<.001$*
Mean change in MASA score	15.6	4.7	
FOIS, median (range) mean change	5 (2–6) 3	3 (1–6) 1.62	$P<.038$†
Aspiration (count), pre/post	6/2	11/7	
Tube presence (count), pre/post	6/2	13/10	
Dysphagia presence (count), pre/post	8/6	16/13	

NOTE. Effect size comparison of group MASA change (Cohen *d*, 2.01 [0.8–3.18]); comparison of group FOIS change (Cohen *d*, .93 [.04–1.82]).
Abbreviation: MASA, Mann Assessment of Swallowing Ability.
*t test, †Mann-Whitney *U* test.

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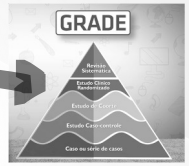
Published in final edited form as:
Head Neck. 2016 April ; 38(Suppl 1): E1221–E1231. doi:10.1002/hed.24197.

Efficacy of Electrical Stimulation and Exercise for Dysphagia in Head and Neck Cancer Patients: A Randomized Clinical Trial

Susan E Langmore, PhD [Professor],



170 pacientes CaCP com disfagia

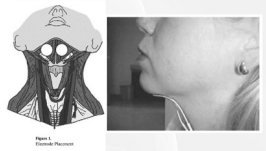
2 grupos: EE ligada + terapia "tradicional" X EE desligada + terapia "tradicional"

Avaliação pré e pós terapia: Videofluoroscopia

Conclusão: EE não teve impacto com significância estatística

E SE O PROBLEMA FOR A DOSE?

170 casos randomizado Prospectivo Compara com grupo controle



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- 4 segundos para iniciar e executar cada deglutição
- 12 segundos de descanso
- 60 deglutições, sendo 10 de cada um citado ao lado (alternado com regulares)
- 16 a 20min tempo total

Table 2

Sequence of Swallow Maneuvers for Each Therapy Session

Patients performed 60 sequential swallows, where they were given 4 seconds to initiate and execute a swallow, and then 12 seconds to rest. This protocol was typically performed in 16–20 minutes.					
10	10	10	10	10	10
Super-supraglottic Swallows	Regular Swallows	Mendelsohn Swallows	Regular Swallows	Effortful Swallows	Regular Swallows

Langmore, 2015

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Parameters of the BMR NT2000

Parameter	Default setting/ Possible Range
Program	0 or 1
Frequency	70 Hertz
Pulse Width	300 microseconds (ranged from 130 – 300)
Contraction	4 seconds (ranged from 4 – 8)
Relaxation	12 seconds (ranged from 12 – 16)
Ramp Up	2 seconds (ranged from 2 – 4)
Ramp Down	0 seconds
Amplitude Limit	0–99 (real) 0–25 (sham)
Options	5 (sound) is "on", all others are "off"
Treatment Time	20 minutes or longer if needed

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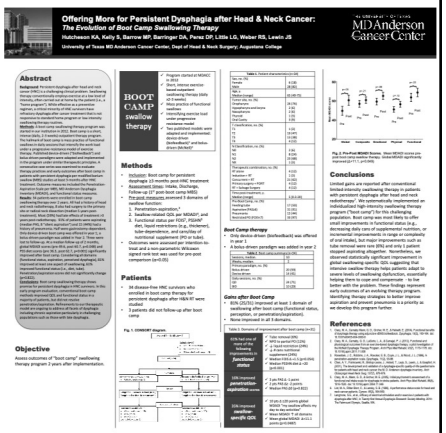
THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center

BOOT CAMP swallow therapy

- ✓ Program started at MDACC in 2012
- ✓ Short, intense exercise-based outpatient swallowing therapy (daily x2-3 weeks)
- ✓ Mass practice of functional swallows
- ✓ Intensifying exercise load under progressive resistance model
- ✓ Two published models were adapted and implemented: device-driven (biofeedback)[1] and bolus-driven (McNeil)[2]



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NATIONAL FOUNDATION OF SWALLOWING DISORDERS

https://swallowingdisorderfoundation.com/

- Os exercícios a seguir e os vídeos associados devem ser usados apenas sob a orientação explícita de seu médico ou fonoaudiólogo (SLP). Você deve consultar seu médico ou especialista médico antes de usar esses exercícios. Se você sentir dor ou sentir sintomas incomuns ao realizar qualquer um desses exercícios, pare o exercício imediatamente e consulte sua equipe médica antes de qualquer outro uso. Leia e compreenda todas as instruções cuidadosamente antes de usar.
- Seu médico ou fonoaudiólogo selecionará quais exercícios são úteis para melhorar sua função de deglutição. Se um exercício não for selecionado, não tente sem consultar sua equipe médica. Eles desenvolverão um programa personalizado e exclusivo para as necessidades de cada paciente. Isso inclui o número de repetições, o número de segundos em que cada exercício deve ser executado e o período de descanso entre os exercícios.
- Um PDF de duas páginas disponível em inglês e espanhol está disponível clicando no link abaixo. Eles podem ser impressos por seu médico para permitir que eles personalizem sua rotina de exercícios de deglutição.

Envolve processo de educação

40

Patient Name: _____
Therapist Name: _____
Date: _____

Perform Exercise (Y/N)	Exercise Name	Description A video is available for each exercise on the NFOSD website	Reps	Time (sec)	Rest Interval
	Effortful Swallow	Collect all the saliva in your mouth onto the center of your tongue. Keep your lips closed and tight together. Pretend you are swallowing a grape whole in one big, hard swallow.		NA	NA
	Isokinetic (dynamic) Shaker	Lie down on a flat surface. Do not use a pillow. Keep your shoulders flat and lift your chin towards your chest so you can see your toes and immediately lower your head. Repeat these steps as many times as prescribed, then rest and repeat as prescribed.	Reps: Sets:	NA	
	Isometric (static) Shaker	Lie down on a flat surface. Do not use pillow. Keep shoulders flat and lift your chin towards your chest so you can see your toes. Hold for as long as prescribed, then set your head down and rest. Repeat as prescribed.	Reps: Sets:		
	Jaw Thrust	Move your lower jaw as far forward as you can. Your lower teeth should be in front of your upper teeth. *Note, patients with jaw replacement should use extra caution before performing this exercise so as not to stress the jaw bone.*			NA
	Lollipop Swallowing	Place a sugarless lollipop in your mouth and lick. Lick three times and then do an effortful swallow with your lips firmly pressed together. Swallow as hard as you can.		NA	NA
	Masako Maneuver	Stick your tongue out of your mouth between your front teeth and gently bite down to hold it in place. Swallow while keeping your tongue gently between your teeth. You can let go of your tongue between swallows and repeat.		NA	NA
	Mendelsohn Maneuver	Place your middle three fingers (index, middle, ring) on your Adam's Apple (the skin in front of your neck beneath your chin). Swallow once to practice. Feel your Adams Apple slide upward as you swallow. Now, swallow again and when your Adam's Apple gets to its highest position in the throat, squeeze your throat muscles and hold it as high as you can for as long as your clinician has directed for this exercise (or as long as you can if you can't hold it for this length of time).			NA
	Yawn	Yawn and when you get into a big stretch, hold that position for as long as indicated.			

www.nfosd.org

These exercises are for informational purposes only, and should not be used as a substitute for consultation with an appropriate health care professional, as each individual's medical situation is unique. It is important that you consult with your medical professional (e.g., physician, SLP) before implementing any course of treatment. Exercises which are new to you should be done with the help of a care giver and when access to emergency medical care is available.

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Perform Exercise (Y/N)	Exercise Name	Description	Reps	Time (sec)	Rest Interval
	Supraglottic Maneuver	Perform this exercise if and only if directed by your clinician. Your clinician should also provide direction as to the position of your head (tucked, right, left, straight). Collect a small amount of saliva in your mouth. Take a deep breath and hold your breath (if the vocal folds are not closed then try to inhale and say ah, turn off your voice and hold your breath). Keep holding your breath while you swallow. Immediately after you swallow, cough. Practice with saliva prior to food or liquid.		NA	NA
	Tongue Strength Exercise	Using a tongue depressor, press the tip of your tongue out against the tongue depressor. Put the tongue depressor on the tip of your tongue and push up. To exercise the middle part of your tongue, put the tongue depressor towards the middle of your tongue and push up against the roof of your mouth. To exercise the back of the tongue, say the "k" sound, then put the tongue depressor on the spot of the tongue that made contact with the roof of your mouth and push up. Next, sweep the tip of your tongue from the very front of your mouth to the back along the roof of your mouth. Lastly, lateralize your tongue from one corner of your mouth to the other.			NA
	Tongue Range of Motion	First, stick your tongue out as far as possible and hold as instructed. Then pull the tongue back into the mouth as far as you can. Then, lateralize the tongue tip to one corner of your mouth and hold. Then switch to the opposite side and hold. Lastly, open your mouth put your tongue tip behind your top teeth and hold the stretch.		NA	NA
	Tongue Retraction	Don't use the tip of your tongue. Instead, pull the back of your tongue as far into the mouth as you can and hold.			NA
	Effortful Pitch Glide	Say "eee" in as low a pitch as possible and then gradually raise the pitch of your voice until the highest tone possible. Hold this tone for the length of time directed by your clinician.			
	Lip Range of Motion	Pull your lips into a smile and hold the stretch. Next, open your jaw wide and then stretch your lips into a smile and hold.			

www.nfosd.org

These exercises are for informational purposes only, and should not be used as a substitute for consultation with an appropriate health care professional, as each individual's medical situation is unique. It is important that you consult with your medical professional (e.g., physician, SLP) before implementing any course of treatment. Exercises which are new to you should be done with the help of a care giver and when access to emergency medical care is available.

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Photobiomodulation Therapy in Head and Neck Cancer-Related Lymphedema: A Pilot Feasibility Study

Jie Deng, PhD, RN, OCN, FAAN[1], John N. Lukens, MD[1], Samuel Swisher-McClure, MD[1], Joy C. Cohn, PT, CLT[1], Bryan A. Spinelli, PT, PhD[2], Ryan J. Quinn, MPH[1], Jesse Chittams, Erin McMenamin, PhD, CRNP[3], and Alexander Lin, MD[2]

Integrative Cancer Therapies
Volume 20: 1–11

LTU-904
Portable Laser
Therapy Unit

LTU-904 Class I laser
904nm, média 5mW
Tamanho do ponto 0,2cm², 1,5J
2X semana, 6 semanas - 12 semanas

Aplicação ocorreu 3 a 18m após término do tratamento

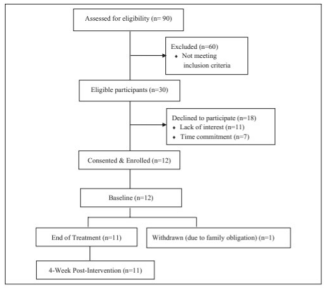

Figure 1. CONSORT flow diagram documenting the number of patients screened, consented, and withdrawn during the study assessment period.

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Open access Protocol

BMJ Open

Manual Therapy for Fibrosis-Related Late Effect Dysphagia in head and neck cancer survivors: the pilot MANTLE trial

Katherine Hutcheson [1], Holly McMillan,[2] Carla Warneke,[3] Christine Porsche,[2] Kiara Savage,[2] Sheila Buoy,[2] Jihong Wang,[4] Karin Woodman,[2] Stephen Lai,[1] Clifton Fuller[2]

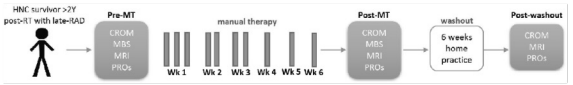

Figure 2 Manual Therapy for Fibrosis-Related Late Effect Dysphagia trial schema. CROM, cervical range of motion; HNC, head and neck cancer; MBS, modified barium swallow; MT, manual therapy; PROs, patient-reported outcomes; RAD, radiation-associated dysphagia; RT, radiotherapy.

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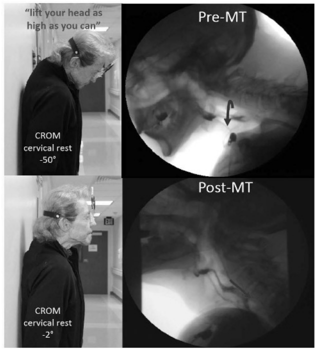
Manual Therapy for Fibrosis-Related Late Effect Dysphagia in head and neck cancer survivors: the pilot MANTLE trial

Figure 1 Cervical extension and aspiration improved in case example after manual therapy (MT). Exemplar case before (top) and after (bottom) single session of MT 18 years post-treatment, surgery and radiotherapy for head and neck cancer. Note red arrows on modified barium swallow study depicting residual bolus in pharynx directed anteriorly toward airway with cervical posture in resting forward head drop (top), and directed posteriorly toward oesophagus with cervical extension improved (bottom). While neither swallowing function or nor cervical biomechanics is normalised or ideal, functional gains were observed. CROM, cervical range of motion.



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Arakawa-Sugueno L

A novel manual therapy programme during radiation therapy for head and neck cancer – our clinical experience with five patients

Krisciunas, G.P.,* Golan, H.,* Marinko, L.N.,† Pearson, W.,‡ Jalisi, S.* & Langmore, S.E.§

Table 1. Manual therapy protocol

Swallow event	Craniomandibular joint involvement	Oral, pharyngeal, laryngeal involvement	Manipulation technique/Targeted therapy
Bolus formation	TMJ (temporomandibular joint): side of bolus formation will distract, contralateral side will translate anteriorly and rotate Craniocervical region: bilateral atlantooccipital post and anterior glide as mandible depresses and elevates to form bolus	Muscles of mastication: buccinators, tongue, TMJ (masseter), suprahyoids, floor of mouth (digastric & omohyoid)	SLP intervention: Apply soft tissue techniques externally to the masseter and intra-orally to the medial pterygoid as it inserts in the angle of mandible and floor of mouth. PT intervention: Soft tissue mobilisation: Manual stretch of medial and lateral pterygoids and masseter intra-orally. Joint mobility to TMJ for both translation and lateral deviation, depression of mandible. Atlantooccipital and atlantoaxial mobility into flexion, extension, and rotation, segmental traction as necessary.
Bolus transfer (Tongue elevation and retraction)	TMJ: same as above Mid cervical spine: segmental stabilization of mid cervical spine to enable adequate length tension of hyoid muscles.	Tongue muscles: Extrinsic muscles: hyoglossus, styloglossus, palatoglossus Intrinsic muscles: superior longitudinal, inferior longitudinal, verticalis, transversus Suprahyoid (SH) Muscles: mylohyoid, geniohyoid, digastrics, stylohyoid Craniocervical flexors: longus colli and longus capitus	SLP Intervention: Lateral Tongue Stretch: Patient grabs tongue with gauze and pulls it laterally while therapist anchors the hyoid to stretch the hyoglossus and styloglossus on the contralateral side. Massage the hyoglossus and styloglossus above hyoid if possible. This also works on the attachment of middle constrictor. Floor of oral cavity: Increase pliability and distance between mandible and hyoid. Stretch the suprahyoid muscles. Especially target the posterior mylohyoid, geniohyoid, and secondarily the anterior digastric, and posterior digastric/stylohyoid. Use the hyoid as a lever to stretch those structures. PT intervention: Manual digital resistance to segments in cervical spine to facilitate Longus colli and capitis P/A to C2-C6 while patient maintains neutral neck and simultaneously moves tongue anterior and superior.
Valve closures: 1. VP valve closure (Naso-pharyngeal) 2. Oral cavity closure	N/A	1. VP Valve Closure Muscles: levator veli palatini and (pharyngeal sphincter portion of superior pharyngeal constrictor) 2. Oral Cavity Closure Muscles: styloglossus, palatoglossus, superior pharyngeal constrictor, suprahyoids, middle constrictor	SLP Intervention: 1. Estill velum figure: say n-gee n-gee multiple times slowly with a strong 'gee' then faster. 2. Open mouth/throat as wide as possible and depress the alternating sides of the root of the tongue with a tongue depressor to stretch the palatoglossus

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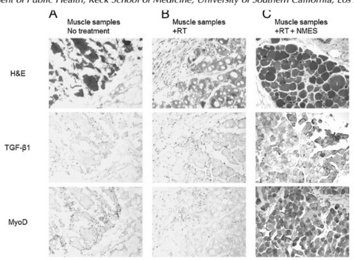
Arakawa-Sugueno L

Neuromuscular Electrical Stimulation Improves Radiation-Induced Fibrosis Through Tgf-B1/MyoD Homeostasis in Head and Neck Cancer

GRACE PENG, MD,[1] KAMIL MASOOD, MPH,[2] OLIVER GANTZ, MD,[1] AND UTTAM SINHA, MD[1]*
[1]*Department of Otolaryngology—Head and Neck Surgery, University of Southern California, Los Angeles, California*
[2]*Department of Public Health, Keck School of Medicine, University of Southern California, Los Angeles, California*



Journal of Surgical Oncology 2016;114:27–31

Fig. 1. Muscle biopsy was performed from the strap muscles in the anterior neck. Similar tissues types were obtained from different patients in each group. H&E was performed prior to IHC for all samples. IHC for TGF-β1 and MyoD were performed on representative strap muscle from non-radiated muscle tissue as a control (**A**), patients who underwent post-operative radiation without neuromuscular electrical stimulation (NMES) (**B**), and patients who underwent post-operative radiation and concurrent TST/NMES (**C**).

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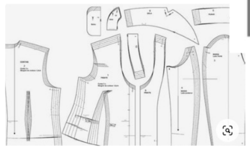

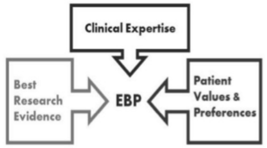

Customização
INDIVIDUALIZAÇÃO
em evidência

Melhores evidências científicas

Estado clínico do paciente
Valores e preferências do paciente

Experiência clínica
Análise dos resultados
Cenário de intervenção
Equipe multidisciplinar envolvida

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@keepswallowing

Keep Swallowing

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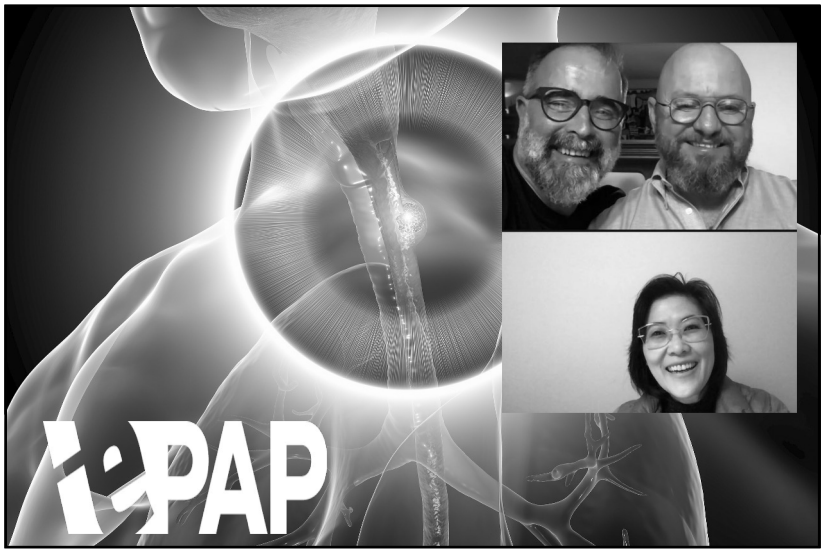

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