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Programa *Team Up* da Oncologia BP



Parceria: AstraZeneca

Avaliação Pré Operatória em CA Pulmão

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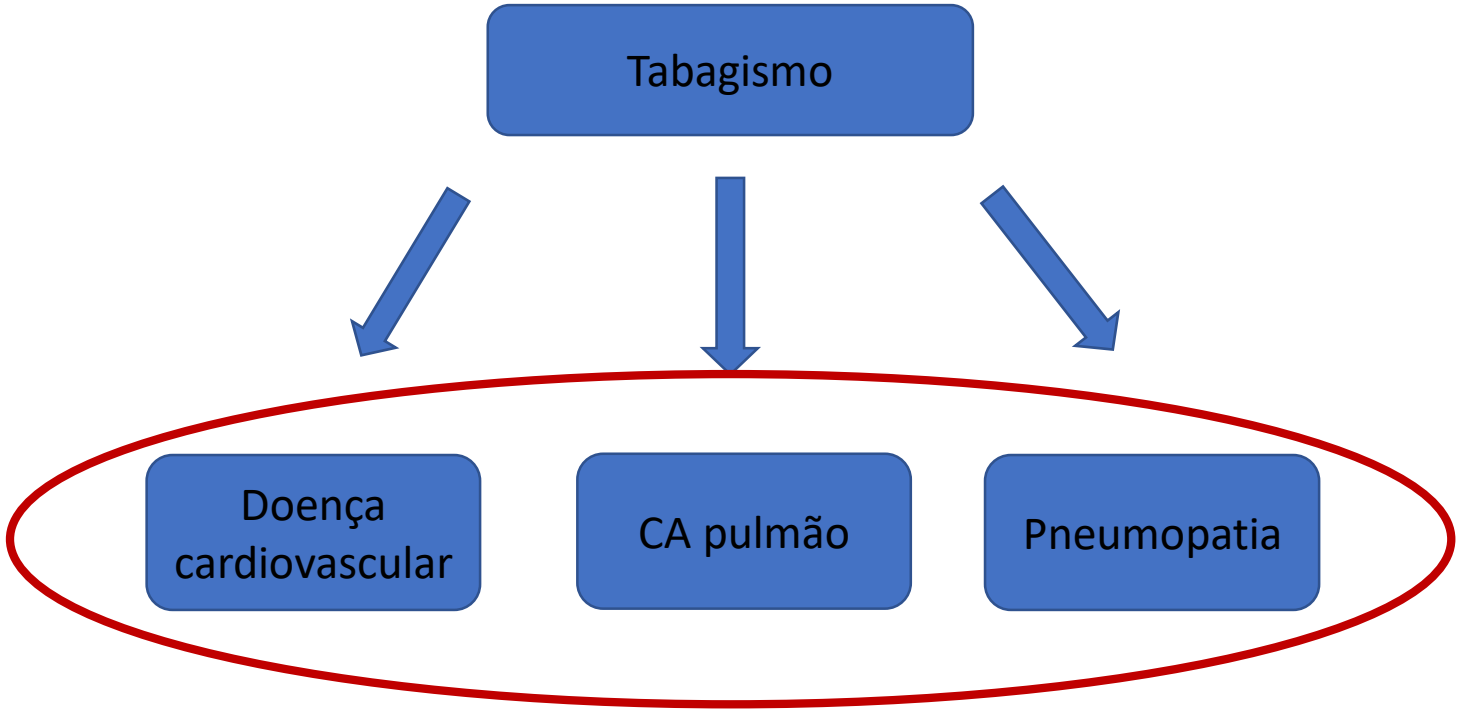
Objetivos

- Classificar paciente de acordo com risco
- Aplicação de espirometria e teste de exercício cardiopulmonar de acordo com algoritmo
- Benefício de reabilitação cardiopulmonar antes da cirurgia

Pauta

- Comorbidades
- Aplicabilidade de algoritmos
- Estratificação de risco

Comorbidades



Importance of a Comprehensive Geriatric Assessment in Prediction of Complications Following Thoracic Surgery in Elderly Patients*

Tatsuo Fukuse, MD; Naoki Satoda, MD; Kyoko Hijiya, MD; and Takuji Fujinaga, MD

Idade isolada não aumento o risco

Limitação para AVDs

Demência

Table 3—*Univariate Analysis of Preoperative CGA Related to Postoperative Complications*

Variable	No.	Complication, %	p Value
Total	120	16.7	
Age, yr			
< 80	11	27.3	0.39
≥ 80	109	15.6	
Preoperative complications			
Yes	79	21.5	0.069
No	41	7.3	
PS			
0, 1	110	16.4	0.67
2, 3	10	20	
ADLs, Barthel index score			
< 100	9	44.4	0.041*
100	111	14.4	
BMI			
< 18.5 or > 25	32	25	0.168
18.5–25	88	13.6	
Mid-AMC, cm			
Female < 17/male < 19	33	21.2	0.42
Female > 17/male > 19	87	14.9	
Albumin, g/dL			
> 3.7	25	24	0.364
≥ 3.7	95	14.7	
Transferrin, g/dL			
< 229	22	18.2	0.761
> 229	98	16.3	
Lymphocyte count, cells/μL			
< 999	18	22.2	0.5
> 999	102	15.9	
Hemoglobin, g/dL			
< 11.0	15	6.7	0.461
≥ 11.0	105	18.1	
Negative emotions for operation†			
Yes (0, 1, 2)	30	13.3	0.779
No (3)	90	17.8	
Dementia, MMSE score			
< 24	9	55.6	0.0065*
≥ 24	111	13.6	

CHEST 2005; 127:886–891

Avalição pré operatória

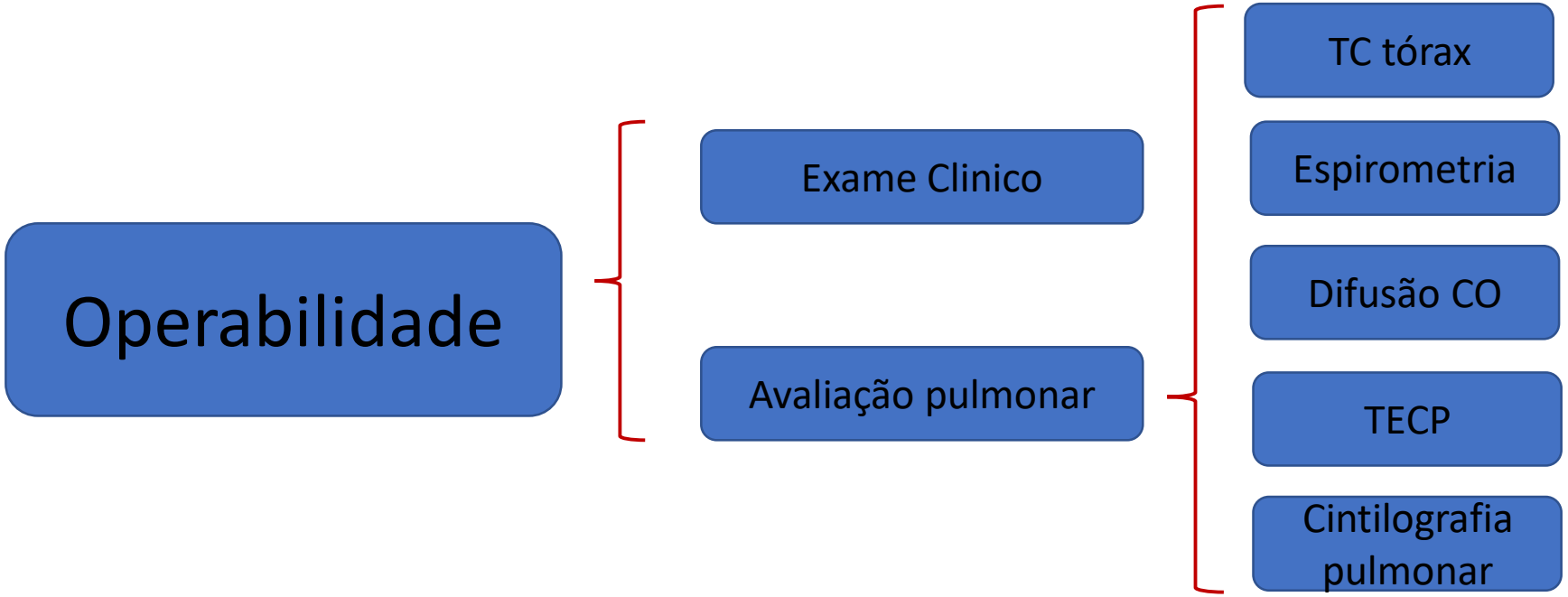
Ressecabilidade

- Relação anatômica do tumor
- Estadio
- Prognóstico

Operabilidade

- Comorbidades
- Exames subsidiários
- Prognóstico

Avalição pré operatória



Alterações fisiológicas

- Cirurgia torácica: 30 – 50% redução de VEF1 nos primeiros dias
  - Perda de tecido pulmonar + disfunção transitória do diafragma
- 1ºmês VEF1 igual VEF1 PPO
- Estabilidade da função e VO2 max após 6 meses
- Pacientes com DPOC têm menor perda FEV1
- ↓ Função ventricular direita e ↑ volume diastólico final

CHEST Supplement

DIAGNOSIS AND MANAGEMENT OF LUNG CANCER, 3RD ED: ACCP GUIDELINES

Physiologic Evaluation of the Patient With Lung Cancer Being Considered for Resectional Surgery

Diagnosis and Management of Lung Cancer, 3rd ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

Alessandro Brunelli, MD, FCCP; Anthony W. Kim, MD, FCCP; Kenneth I. Berger, MD, FCCP; and Doreen J. Addrizzo-Harris, MD, FCCP

Risco cardíaco

- Prevalência de doença coronariana: 11-17%
- Risco de complicações cardíacas após cirurgia: 2-3%



ThRCRI (Indice de risco cardio-torácico revisado)
Pneumonectomia: 1.5 pontos
Isquemia miocárdica prévia: 1.5 pontos
AVC ou AIT prévios: 1.5 pontos
Creatinina > 2 mg/dl: 1 ponto



Cálaculo VEF1 e DCO ppo %

Pneumectomia

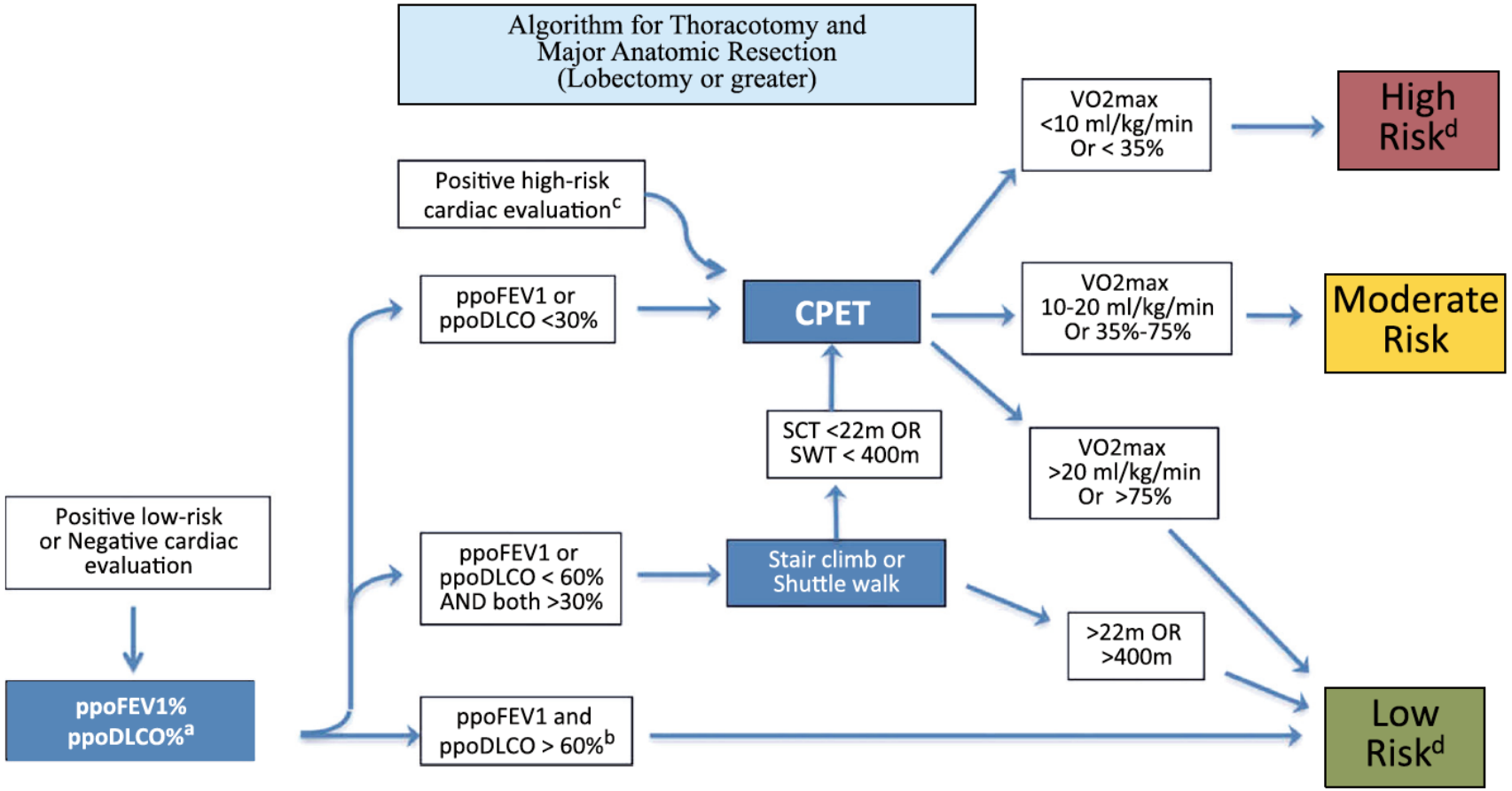
VEF1 PPO% = VEF1 pré operatório% x (1 – fração total da perfusão do pulmão a ser ressecado)

DCO PPO% = DCO pré operatório % x (1 – fração total da perfusão do pulmão a ser ressecado)

Lobectomia

$$\text{VEF1 PPO\%} = \text{VEF1 pré operatório\%} \times \left(\frac{\text{Nº de segmentos ressecados}}{\text{Total de segmentos}} \right)$$

$$\text{DCO PPO\%} = \text{DCO pré operatório\%} \times \left(\frac{\text{Nº de segmentos ressecados}}{\text{Total de segmentos}} \right)$$



Actual Risks affected by parameters defined here and:
- Patient Factors: Comorbidities, age
- Structural Aspects: center (volume, specialization)
- Process factors: Management of complications
- Surgical access: Thoracotomy vs. minimally invasive

Risk of postoperative complications in chronic obstructive lung diseases patients considered fit for lung cancer surgery: beyond oxygen consumption

Complicações cardiopulmonares VO2 max > 10ml/Kg/min

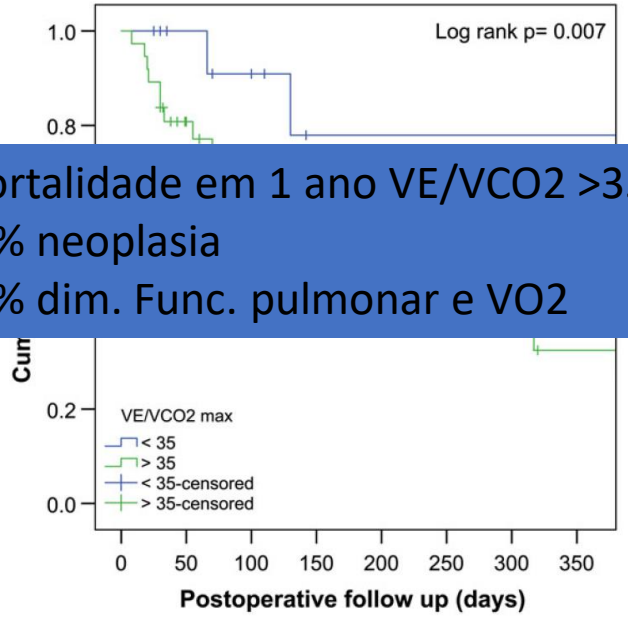
VE/VCO2 > 35

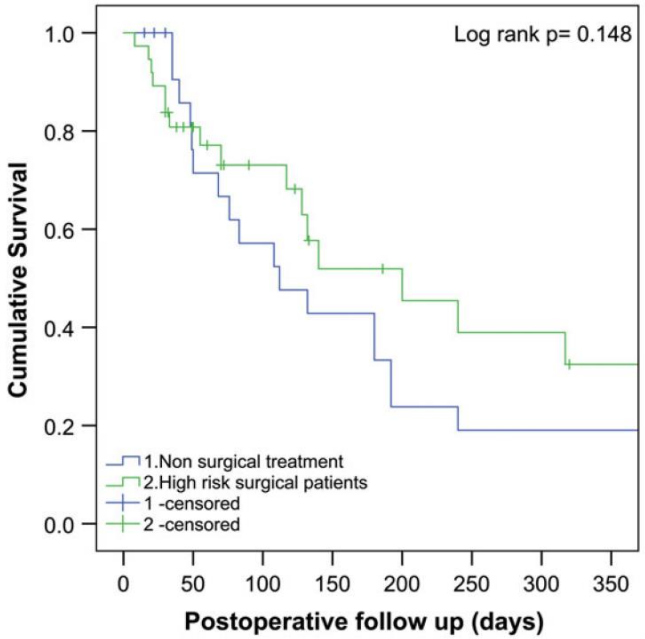
Complicações: 41%
Morte: 4%

100% dos eventos

VE/VCO2 e mortalidade

Mortalidade em 1 ano VE/VCO2 >35:
37% neoplasia
45% dim. Func. pulmonar e VO2





THORACIC SURGERY (G. ROCCO AND M. SCARCI, SECTION EDITORS)

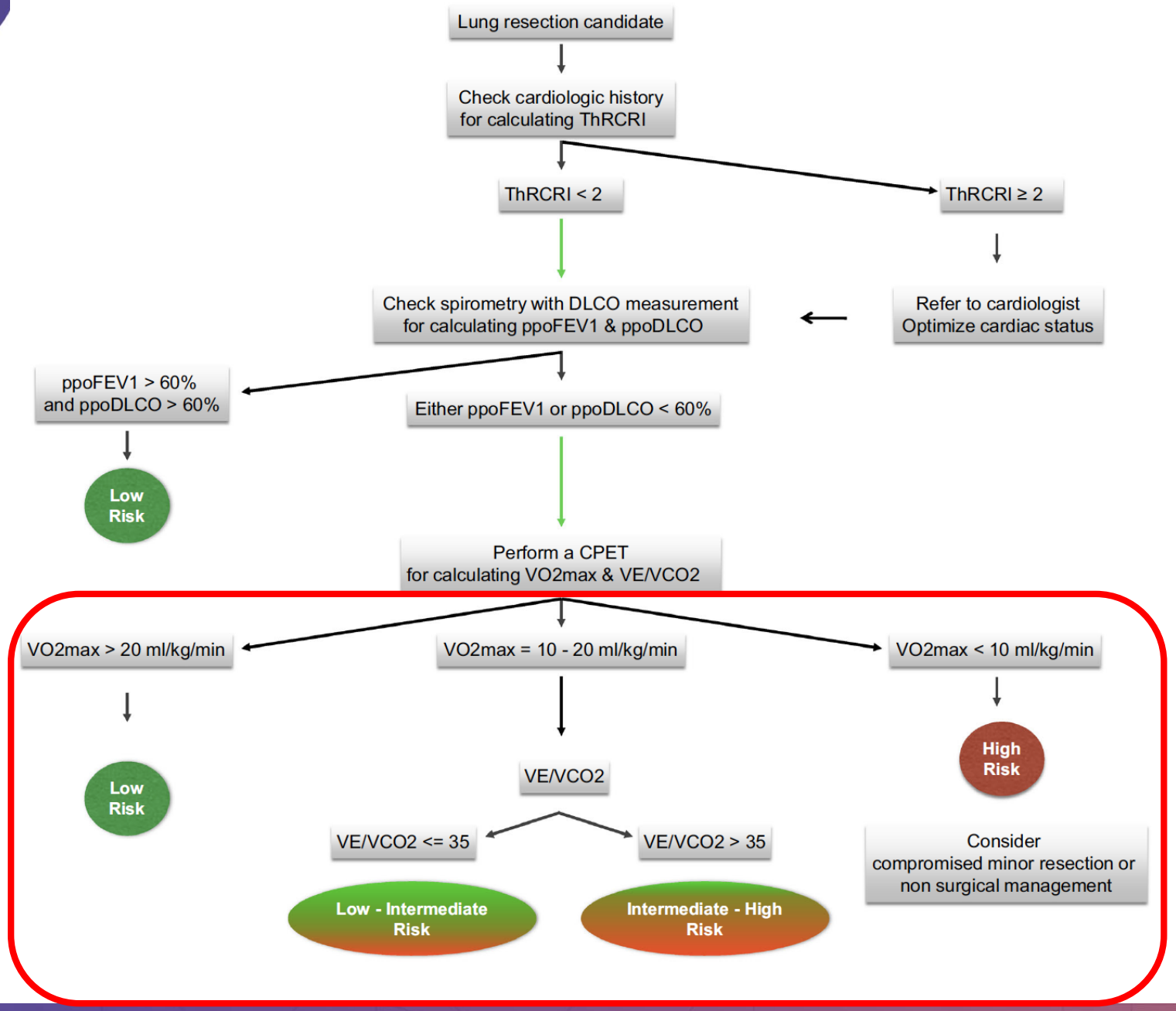
Risk Stratification in Lung Resection

Michele Salati[1] · Alessandro Brunelli[2]

Revisão da literatura - Estudos relevantes

Compreensão da necessidade de refinamento do risco intermediário
Utilização de VE/VCO2

Proposto novo algoritmo

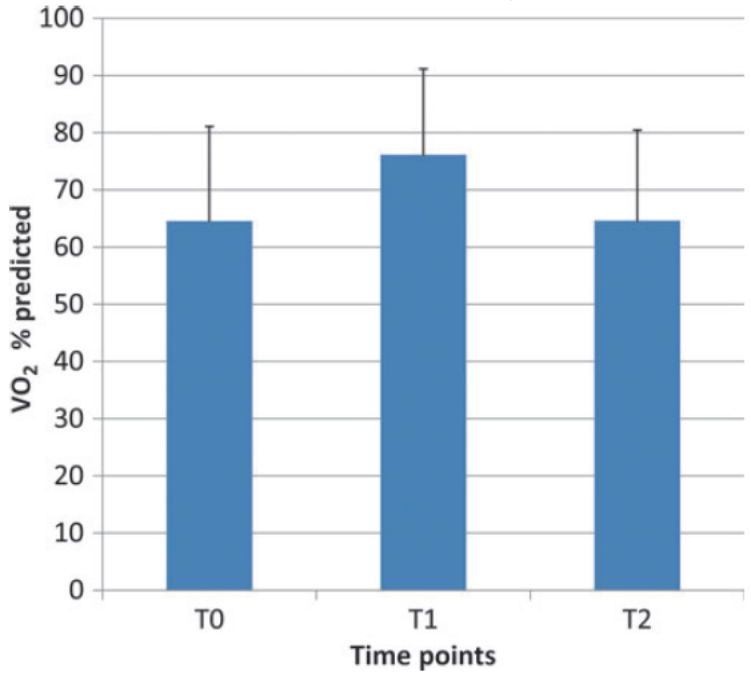


4 faixas de risco

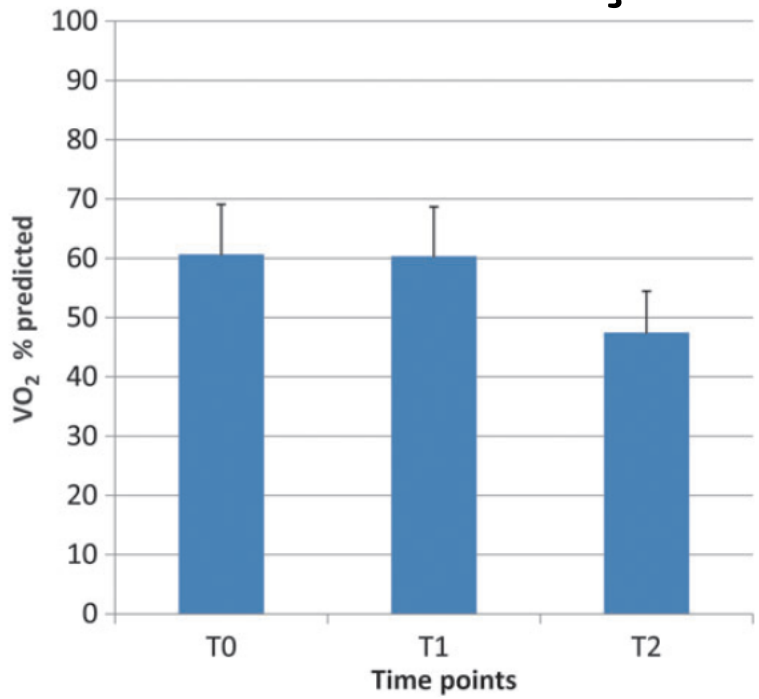
High-intensity training and cardiopulmonary exercise testing in patients with chronic obstructive pulmonary disease and non-small-cell lung cancer undergoing lobectomy

Francesco Stefanelli[a], Ilernando Meoli[a], Raffaele Cobuccio[a,*], Carlo Curcio[b], Dario Amore[b], Dino Casazza[b], Maura Tracey[c] and Gaetano Rocco[c]

Reabilitação



Não Reabilitação



Effect of prehabilitation on ventilatory efficiency in non–small cell lung cancer patients: A cohort study

Francis-Edouard Gravier, PT, MSc,[a,b] Tristan Bonnevie, PT, MSc,[a,b] Fairuz Boujibar, PT, MSc,[c,d] Clément Médrinal, PT, PhD,[b,e] Guillaume Prieur, PT, MSc,[b,e] Yann Combret, PT, MSc,[f,g] Jean-François Muir, MD, PhD,[a,b] Antoine Cuvelier, MD, PhD,[b,d] Jean-Marc Baste, MD, PhD,[c,h] and David Debeaumont, MD[i]

Variable	n	Before prehabilitation	After prehabilitation	*P* value
VE/VCO_2 slope*	50	37.1 (33.8-43.4)	35.4 (31.1-40.5)	.09
VO_{2peak}, mL/kg/min*	50	13.2 (11.9-14.7)	14.8 (13.1-16.4)	<.01†
VO_{2peak}, % th.‡	50	58.18 (10.05)	63.84 (10.31)	<.01†
W_{peak}, W‡	49	73.16 (21.64)	82.76 (23.98)	<.01†
W_{peak}, % th.‡	49	56.65 (12.92)	63.84 (10.31)	<.01†
W_{VT}, W*	47	40 (30-50)	45 (40-60)	<.01†
VO_{2VT}/VO_{2peak}, %*	47	43 (35-48)	44 (38-49)	.04†

Cochrane Library

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Cochrane Database of Systematic Reviews

Preoperative exercise training for patients with non-small cell lung cancer (Review)

Figure 4. Forest plot of comparison: 1 Intervention group versus control group, outcome: 1.1 Risk of developing a postoperative pulmonary complication.

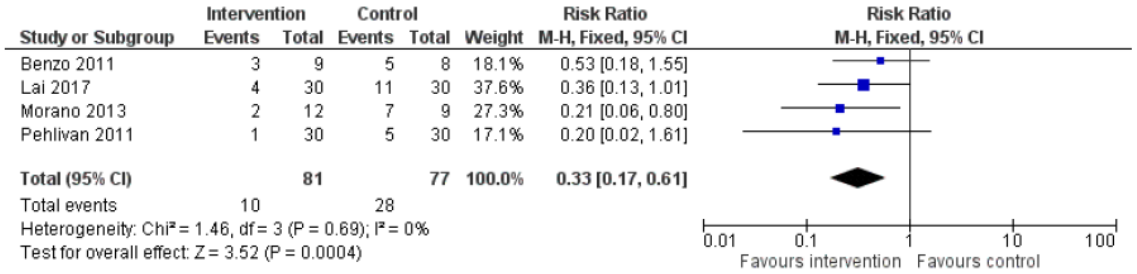


Figure 5. Forest plot of comparison: 1 Intervention group versus control group, outcome: 1.2 Number of days patients needed an intercostal catheter.

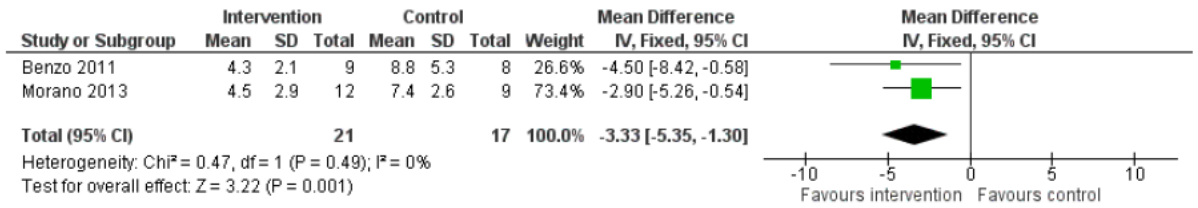
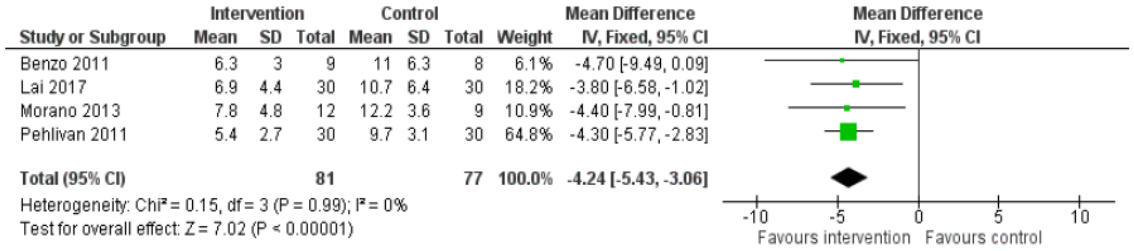
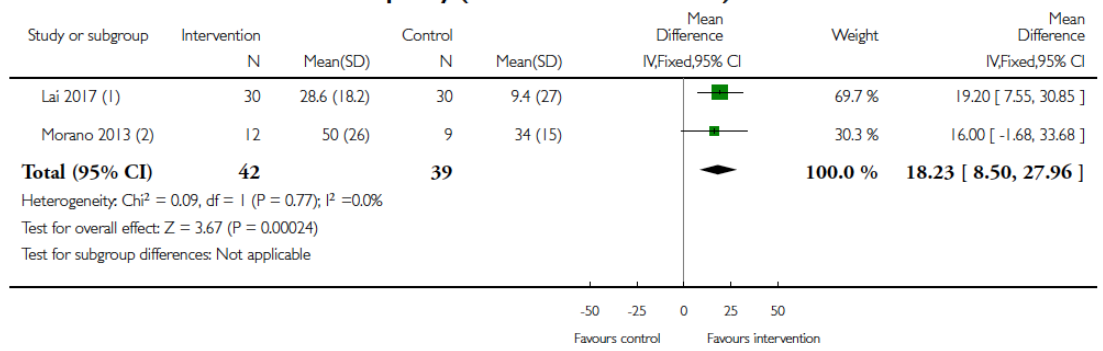


Figure 6. Forest plot of comparison: 1 Intervention group versus control group, outcome: 1.3 Postoperative length of hospital stay.



Analysis 1.4. Comparison 1 Intervention group versus control group, Outcome 4 Preoperative exercise capacity (6-minute walk distance).



Conclusão

- Comorbidades
- Idade não é fator impeditivo
- Avalição de risco cardiopulmonar
  - Não recomendado testes submáximos (difícil reprodutividade)
  - Incorporado VE/VCO2 no risco intermediário
- Reabilitação pré cirurgia
- Risco elevado (tratamento cirúrgico x outra modalidade)

Bibliografia

- Brunelli A, Kim AW, Berger KI, Addrizzo-Harris DJ. Physiologic evaluation of the patient with lung cancer being considered for resectional surgery: Diagnosis and management of lung cancer, 3rd ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest. 2013;143(5 Suppl):e166S-e90S.
- 2. Shafiek H, Valera JL, Togores B, Torrecilla JA, Sauleda J, Cosio BG. Risk of postoperative complications in chronic obstructive lung diseases patients considered fit for lung cancer surgery: beyond oxygen consumption. Eur J Cardiothorac Surg. 2016;50(4):772-9.
- 3. Salati M, Brunelli A. Risk Stratification in Lung Resection. Curr Surg Rep. 2016;4(11):37.
- 4. Stefanelli F, Meoli I, Cobuccio R, Curcio C, Amore D, Casazza D, et al. High-intensity training and cardiopulmonary exercise testing in patients with chronic obstructive pulmonary disease and non-small-cell lung cancer undergoing lobectomy. Eur J Cardiothorac Surg. 2013;44(4):e260-5.

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