Intra-Operative Steroid Use During Pneumonectomy is not Associated with Increased Bronchopleural Fistula or Infectious Complications

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Background

- Intra-operative steroid use may reduce the incidence of post-pneumonectomy ARDS.
- Surgeons are reluctant to use it.
- Concerns about potential increased risk of bronchopleural fistula (BPF) & infectious complications.
- Anaesthesiologists routinely use intra-operative steroids for prophylaxis of postoperative nausea & vomiting

Methods

- Retrospective cohort study using prospectively collected data on consecutive pneumonectomies between 2005 & 2015.
- Anesthetic records were reviewed for type & dose of steroid administered intra-operatively.
- Univariable & multivariable analyses were performed.

Dexamethasone	4-8mg IV	92.4% n=49
Hydrocortisone	100mg IV	7.5% n=4
Methylprednisolone	1g IV	3.8% n=2

Objective

- Our objective was to assess the safety of intra-operative steroid use during pneumonectomy with respect to BPF & infectious complications

Results

- **251 pneumonectomies**
 - 8 (3.2%) non-cancer indications (mostly for complications of non-tuberculous mycobacterial disease)
 - 121 (48.2%) extrapleural pneumonectomies for mesothelioma or thymoma
 - Remaining were for lung cancer
- **53 (21.1%) exposed to intra-op steroids**
- **BPF: 2 (3.8%) steroids vs. 6 (3.0%) no steroids (*p* 0.68)**
- **Infectious Complications: 9 (17%) steroids vs. 23 (11.6%) no steroids (*p* 0.35)**
- **Univariable & multivariable analyses:**
 - “Non-cancer indication for resection was the only factor significantly associated with infectious complications : adjusted odds ratio =13.83, 95%CI:3.01-63.57, (*p*=0.001)”
 - “ Intra-operative steroid use was not significantly associated with infectious complications adjusted odds ration=0.96, 95%CI:0.31-2.97, (*p*=0.95)
- **No significant difference in 90-day mortality (*p* 0.51) & respiratory failure (*p* 0.19) between the 2 groups**

Conclusion

The use of intraoperative steroids during pneumonectomy appears reasonably safe, recognizing the limitation of sample size & a single center experience.

	No Infectious Complications (n=219)	Infectious Complications (n=32)	p
Age at OR, mean (standard deviation [SD])	59.9 (12.6)	59.9 (9.7)	0.98
Male, % (n)	71.7% (157)	62.5% (20)	0.30
Pre-operative %predicted FEV1, mean (SD)	75.6 (17.4)	69.2 (19.4)	0.09
Pre-operative %predicted DLCO, mean (SD)	82.4 (18.2)	78.8 (19.9)	0.36
Charlson Comorbidity index, mean (SD)	2.9 (1.8)	3.2 (1.5)	0.37
Body Mass Index, mean (SD)	26.0 (4.9)	26.1 (4.0)	0.90
Current Smoker, % (n)	4.6% (10)	6.2% (2)	0.66
Left pneumonectomy, % (n)	49.8% (109)	37.5 % (12)	0.26
Completion pneumonectomy, % (n)	10.0% (22)	18.8% (6)	0.14
Intrapleural pneumonectomy, % (n)	38.8% (85)	37.5% (12)	1.00
Extrapleural pneumonectomy, %(n)	49.8% (109)	37.5 % (12)	0.26
Non-cancer indication for resection, % (n)	1.4% (3)	15.6% (5)	0.0001
Pre-operative radiation therapy, % (n)	31.5% (69)	37.5% (12)	0.54
Pre-operative chemotherapy, %(n)	24.2% (53)	25.0% (8)	1.00
Intra-operative steroid use, %(n)	20.0% (44)	28.1% (9)	0.35

Infectious Complications	Intra-op Steroids (n=53)	No Intra-Op Steroids (n=198)	P
Pneumonia, n (%)	5 (9.4%)	11 (5.6%)	0.54
Surgical Site Infection, n (%)	2 (3.8%)	7 (3.5%)	1.00
Urinary Tract Infection, n (%)	1 (1.9%)	2 (1.0%)	0.51
Line Infection, n (%)	0	1 (0.5%)	1.00
Empyema, n (%)	3 (5.7%)	7 (3.5%)	0.69