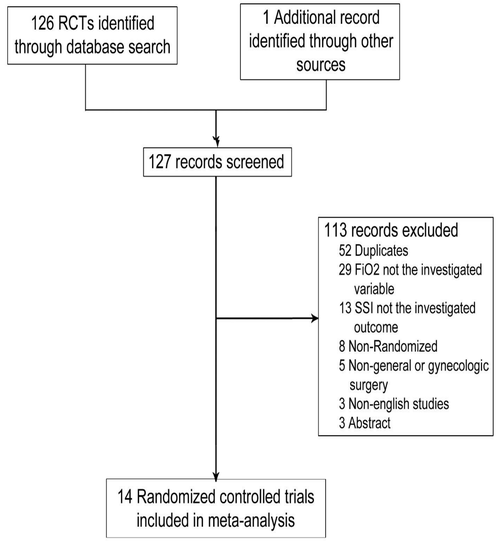
REDUCING THE SURGICAL SITE INFECTIONS RATE IN COLORECTAL SURGERY PATIENTS. ROLE OF HIGH FLOW SUPPLEMENTAL OXYGEN. A METANALYSIS

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Introduction

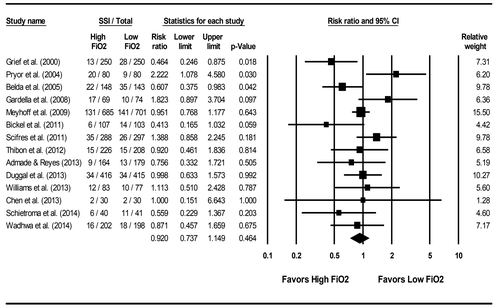
- Surgical Site Infections (SSI), with an overall incidence of 2.8% in the United States (US), have always been challenging to manage despite the revolutionary advances in sterile techniques and optimum preoperative care. ***(1)***
- The association between oxygen and its oxidative antibacterial killing, mediated through the neutrophils, has long been established***. (2)***
- Postoperative patients receive oxygen routinely for adequate saturation, but whether hyperoxia can decrease SSI remains debatable.
- The current metanalysis is an effort to explain the controversies in the literature regarding the role of perioperative oxygen supplementation in minimizing the risk of postoperative SSI.



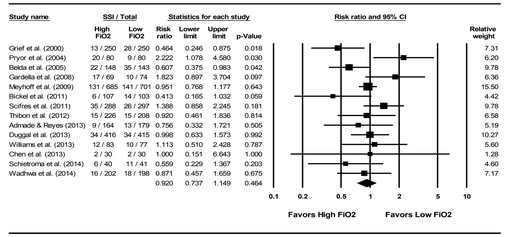
Methods

- Data was collected after an extensive literature review from PubMed, Google Scholar, and Cochrane library. All those randomized control trials (RCTs) which assessed the role of various concentrations of supplemental oxygen on the postoperative SSI rates were included in the study.
- Data on all the patients with major abdominal surgery were collected and then divided based on the subspecialty. Fractional inspired oxygen (FiO2) of >80% was categorized as high supplement oxygen, while Fio2 < 30% was labeled as low supplement oxygen.

Results



Study name	SSI / Total		Statistics for each study				Relative weight
	High FiO2	Low FiO2	Risk ratio	Lower limit	Upper limit	p-Value	
Grief et al. (2000)	13 / 250	28 / 250	0.464	0.246	0.875	0.018	7.31
Pryor et al. (2004)	20 / 80	9 / 80	2.222	1.078	4.580	0.030	6.20
Belda et al. (2005)	22 / 148	35 / 143	0.607	0.375	0.983	0.042	9.78
Gardella et al. (2008)	17 / 69	10 / 74	1.823	0.897	3.704	0.097	6.36
Meyhoff et al. (2009)	131 / 685	141 / 701	0.951	0.768	1.177	0.643	15.50
Bickel et al. (2011)	6 / 107	14 / 103	0.413	0.165	1.032	0.059	4.42
Scifres et al. (2011)	35 / 288	26 / 297	1.388	0.858	2.245	0.181	9.78
Thibon et al. (2012)	15 / 226	15 / 208	0.920	0.461	1.836	0.814	6.58
Admade & Reyes (2013)	9 / 164	13 / 179	0.756	0.332	1.721	0.505	5.19
Duggal et al. (2013)	34 / 416	34 / 415	0.998	0.633	1.573	0.992	10.27
Williams et al. (2013)	12 / 83	10 / 77	1.113	0.510	2.428	0.787	5.60
Chen et al. (2013)	2 / 30	2 / 30	1.000	0.151	6.643	1.000	1.28
Schietroma et al. (2014)	6 / 40	11 / 41	0.559	0.229	1.367	0.203	4.60
Wadhwa et al. (2014)	16 / 202	18 / 198	0.871	0.457	1.659	0.675	7.17
			0.920	0.737	1.149	0.464	



Study name	SSI / Total		Statistics for each study				Relative weight
	High FiO2	Low FiO2	Risk ratio	Lower limit	Upper limit	p-Value	
Grief et al. (2000)	13 / 250	28 / 250	0.464	0.246	0.875	0.018	29.84
Belda et al. (2005)	22 / 148	35 / 143	0.607	0.375	0.983	0.042	51.81
Chen et al. (2013)	2 / 30	2 / 30	1.000	0.151	6.643	1.000	3.35
Schietroma et al. (2014)	6 / 40	11 / 41	0.559	0.229	1.367	0.203	15.00
			0.563	0.398	0.796	0.001	

Conclusion

- Supplementing patients with high and low fraction oxygen to reduce the SSI has always been controversial and limited data is available. Our cohort showed that high fraction supplemental oxygen showed favorable outcomes in reducing the SSI in patients with colorectal surgery only.
- More studies mainly focused on analyzing the risk SSIs based on the surgery method (minimally invasive vs. laparoscopically) are needed to understand better the role of oxygen supplementation and SSI reduction rate, particularly in colorectal surgery

References

1. *1. Munoz-Price LS, Sands L, Lubarsky DA. Effect of High Perioperative Oxygen Supplementation on Surgical Site Infections. Clinical Infectious Diseases. 2013;57(10):1465-1472. doi:10.1093/cid/cit493*
2. *Schietroma M, Cecilia EM, Sista F, Carlei F, Pessia B, Amicucci G. High-concentration supplemental perioperative oxygen and surgical site infection following elective colorectal surgery for rectal cancer: a prospective, randomized, double-blind, controlled, single-site trial. Am J Surg. Nov 2014;208(5):719-726. doi:10.1016/j.amjsurg.2014.04.002*