

GYN Pre-operative Tobacco Cessation

Introduction

Tobacco abuse is a major health problem in Alaska Native people, as 44.4% of Alaska Natives smoke versus 21.0 % of non-Natives smoke tobacco. It has been noted that Alaska Native Medical Center (ANMC) had unacceptably high rate of post-op complications, e. g., pneumonia and wound site infection. Eighty seven percent of ANMC's pneumonia cases occur in active/ former smokers or customer owners (CO) with smoking- related chronic lung disease. In response tobacco cessation has been effectively implemented in various surgical services at ANMC, which have resulted in improved health outcomes and lower costs.

Background

Nicotine is a vasoconstrictor that reduces nutritional blood flow to the epithelium, resulting in tissue ischemia and impaired healing, which leads to poor gynecologic outcomes. (Silverstein 1992) One of the first controlled studies on surgical wound healing focused on 120 women who had undergone GYN laparotomy sterilization. (Siana 1989) Using a scoring system, the investigators determined that cosmetic scar results were significantly poorer in 69 smokers than in 51 nonsmokers. Scarring was unsatisfactory in 25% of the smokers, compared with none of the nonsmokers.

Tobacco use has been identified as an independent risk factor for mesh exposure after the tension-free vaginal insertion. (Withagen 2011) Tobacco use was a risk factor for vaginal mesh exposure after abdominal sacrocolpopexy. (Cundiff 2008) Slower wound healing clinically has been observed in smokers. (Cundiff 2008) Four weeks of tobacco abstinence reduced tobacco-associated surgical complications. (Knobloch 2008) Jones et al reported that preoperative tobacco use was predictive of adverse outcomes of cardiac surgery in the elderly, and pulmonary complications may exert a significant effect on outcome. (Jones 2011)

A systematic review of randomized trials evaluated the effect of tobacco cessation on postoperative complications and observational studies evaluating the risk of complications among past smokers compared with current smokers. (Mills 2011) Mills et al found decreasing total complications, reduced wound healing complications, and pulmonary complications. (Mills 2011) Meyers found similar results in a separate contemporaneous systematic review. (Meyers 2011)

Observational studies examining duration of cessation demonstrated that longer periods of cessation, compared with shorter periods, had an average reduction in total complications of 20%. (Mills 2011) The optimum period of abstinence has not been determined, but improvement was noted after at least 8 weeks of cessation, while the ideal would likely be six months of abstinence. (Warner 1989, Sorenson 2003, Chow 2011)

The pre-op setting may be a good time to quit.

- Teachable moment
- Surgery as a lever
- 75% of smokers want to quit
- Most have tried to quit already
- Those who succeed usually have to try to quit multiple times

- Have to quit while in hospital anyway

Tobacco cessation is not a panacea. On the other hand, perioperative tobacco cessation revealed that short-term quit rates (or a reduction by more than half of normal daily rate) ranged from 18% to 93% in patients receiving a tobacco intervention (mean 55%), compared with a range of 2%-65% of controls (mean = 27.7%). (Cropley 2008) Two studies examined tobacco status at 6 months but these revealed no significant difference in abstinence rates between patients who had received an intervention and those that had not. Studies that incorporated counseling in addition to nicotine replacement therapy appeared to show greater benefits. It is concluded that tobacco cessation interventions prior to surgery are effective in helping patients to quit tobacco. However, such effects appear to be short-lived. (Cropley 2008)

On the other hand, even if only one CO quits tobacco in the long term, that will be helpful to her long term ultimate health outcomes – far outweighing her gynecologic health benefits.

Management

All patients should be encouraged to quit tobacco use, but the following applies to:

- all non-emergent major abdominal surgery
- any cases involving retained non-biologic material, e. g., TVT, TOT, mesh
- pelvic reconstruction, e. g., USLS, perineoplasty, SSLS, combined anterior/posterior colporrhaphy
- abdominal sacrocolpopexy
- rectal sphincteroplasty, fistula repair

How to implement:

Tobacco cessation should be mentioned to the CO as soon a surgical intervention is anticipated. This includes both smoking and chew tobacco.

The CO should be abstinent from tobacco use for eight weeks prior to the surgery being scheduled.*

Chronic Obstructive Pulmonary Disease screening

- Long term smoker > 40 years old
- Screening be done in village
- Results sent electronically to ANMC Pulmonary Dept.
- All patients with COPD should be on dual inhalers before and after surgery.

Nicotine / cotinine testing

- Ordered on selected patients only
- Testing option should be mentioned to patient at onset of tobacco cessation for surgery

(The CO needs to be off Nicotine replacement for 3-5 days in order for test to be negative)

Tobacco Cessation Counseling

The CO can be referred through Cerner to:

- SCF Tobacco Cessation / Health Education, 729 2689
- ANTHC Tobacco Cessation, 729 4565

At regional Field GYN Clinics

- Contact Regional Tobacco Cessation programs

* A 4-8 week duration of abstinence can be utilized by the GYN surgeon on a case by case basis.

Resources:

American Society of Anesthesiologists, ASA Stop Smoking Initiative

<http://www.asahq.org/resources/clinical-information/asa-stop-smoking-initiative>

Stop smoking for Surgery, (ASA patient brochure, accessed 10/17/18)

file:///C:/Users/njmurphy/Downloads/asa_stop_smoking_patient_final.pdf

Help Your Patients Stop Smoking for Surgery (ASA physician brochure, accessed 10/17/18)

file:///C:/Users/njmurphy/Downloads/asa_stop_smoking_doctors_final.pdf

References

Tobacco use and women's health. Committee Opinion No. 503. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2011;118:746–50. (Reaffirmed 2017)

Turan A, Mascha EJ, Roberman D, et al. Smoking and perioperative outcomes. *Anesthesiology* 2011; 114:837.

Risk factors for impaired wound healing and wound complications. UpToDate

https://www.uptodate.com/contents/risk-factors-for-impaired-wound-healing-and-wound-complications?search=tobacco%20wound%20healing&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H179550987 (Accessed 10/17/18)

Siana JE, Rex S, Gottrup F. The effect of cigarette smoking on wound healing. *Scand J Plast Reconstr Surg* 1989; 23: 207-9.

Withagen MI, Vierhout ME, Hendriks JC, Kluivers KB, Milani AL. Risk factors for exposure, pain, and dyspareunia after tension-free vaginal mesh procedure. *Obstet Gynecol*. 2011 Sep;118(3):629-36.

Cundiff GW, Varner E, Visco AG, Zyczynski HM, Nager CW, Norton PA, et al. Pelvic Floor Disorders Network. Risk factors for mesh/suture erosion following sacral colpopexy. *Am J Obst Gynecol* 2008;199:688.e1–5.

Silverstein P. Smoking and wound healing. *Am J Med* 1992; 15:22S–4S.

Knobloch K, Gohritz A, Reuss E, Vogt PM. [Nicotine in plastic surgery: a review] [article in German]. *Chirurg* 2008;79: 956–62.

Mills E, Eyawo O, Lockhart I, Kelly S, Wu P, Ebbert JO. Smoking cessation reduces postoperative complications: a systematic review and meta-analysis. *Am J Med*. 2011 Feb;124(2):144-154.e8.

Chow CK, Devereaux PJ. The optimal timing of smoking cessation before surgery: Comment on "Smoking cessation shortly before surgery and postoperative complications". *Arch Intern Med*. 2011 Jun 13;171(11):989-90.

Jones R, Nyawo B, Jamieson S, Clark S. Current smoking predicts increased operative mortality and morbidity after cardiac surgery in the elderly. *Interact Cardiovasc Thorac Surg*. 2011 Mar;12(3):449-53.

Cropley M, Theadom A, Pravettoni G, Webb G. The effectiveness of smoking cessation interventions prior to surgery: a systematic review. *Nicotine Tob Res*. 2008 Mar;10(3):407-12.

Myers K, Hajek P, Hinds C, McRobbie H. Stopping smoking shortly before surgery and postoperative complications: a systematic review and meta-analysis. *Arch Intern Med*. 2011;171(11):983.

Warner MA, Offord KP, Warner ME, Lennon RL, Conover MA, Jansson-Schumacher U. Role of preoperative cessation of smoking and other factors in postoperative pulmonary complications: a blinded prospective study of coronary artery bypass patients. *Mayo Clin Proc*. 1989 Jun;64(6):609-16.

Sorensen LT, Karlsmark T, Gottrup F. Abstinence from smoking reduces incisional wound infection: a randomized controlled trial. *AnnSurg*. 2003;238:1-5.

Annotated Bibliography

Lancet 2002;359:114-7. 120 pts. Knee and hip arthroplasties, postop complications drop from 52 to 18%.

Chest 2005 Jun;127(6):1977-83. No paradoxical increase in pulmonary complication if quit < 2 months pre-op.

B J Surg 2009 May;96(5):451-61: Ex-smokers (quit 4 weeks pre-op) decrease post-surgical infections by 50% compared to smokers. Increased quit rate at 12 months.

Ann Surg 2008 Nov;248(5):739-45. Quit 4 wks before and after surgery complications in 15% compared to 35% cont. smoking.

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