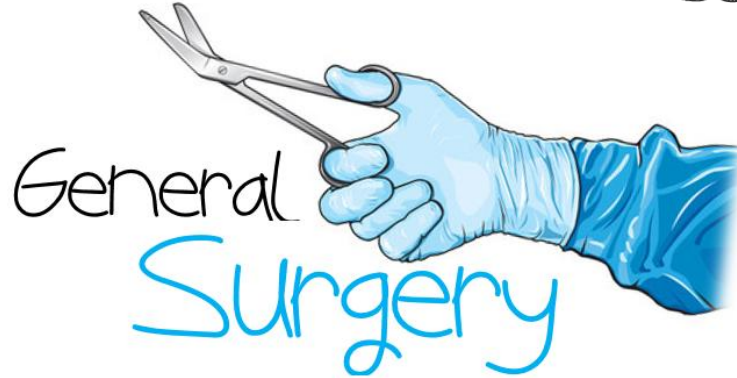




The University Of Jordan
Faculty of Dentistry
fourth Year
2016-2017



slides

handout

sheet

Website
:
<http://dentistry2018.weebly.com/>

LECTURE # :
10

DOCTOR :

DONE BY :

CORRECTED BY :

DAY & DATE :
Day, Month, DATE, 2017

PRICE :

ABC Books – مكتبة تلاع العلى –

شارع الجامعة الأردنية – جسر كلية الزراعة
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Second third of the lecture

No slides were given, the record wasn't clear & the Dr's voice as well, I added slides related to what the dr mentioned & focussed on, unfortunately, you'll see (**) where I could not hear precisely. Sorry for not giving you the best. Good luck!

Risk factors (RF) for surgical sites infections (SSI), could be related to the patient, operation, surgeon..**

The image shows two presentation slides. The top slide is titled "Risk Factors" and lists three main categories: Patient characteristics, Operation characteristics, and Postoperative. The bottom slide is titled "Operation Factors" and lists various factors such as Duration of surgical scrub, Maintain body temp, Skin antisepsis, Preoperative shaving, Duration of operation, Antimicrobial prophylaxis, Operating room ventilation, Inadequate sterilization of instruments, Foreign material at surgical site, Surgical drains, Surgical technique, Poor hemostasis, Failure to obliterate dead space, and Tissue trauma. Both slides include a small text at the bottom: "Presented during the 21st PHICS Convention, 28-29 May 2015".

Risk Factors

- Patient characteristics
- Operation characteristics
 - Preoperative
 - Intraoperative
 - Postoperative

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Operation Factors

- Duration of surgical scrub
- Maintain body temp
- Skin antisepsis
- Preoperative shaving
- Duration of operation
- Antimicrobial prophylaxis
- Operating room ventilation
- Inadequate sterilization of instruments
- Foreign material at surgical site
- Surgical drains
- Surgical technique
 - Poor hemostasis
 - Failure to obliterate dead space
 - Tissue trauma

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Duration of operation is RF, as sometimes you may have to give second dose of antibiotic during surgery (Sx) "Sx exceeding more than 3 hours".

Operation room, sterlization & strict aseptic techniques are also RF.

We always have to prevent factors that favor infections; forign body, tissue, fluid.. **

Pt RF; **age**, **diabetes** (you have to control blood sugar**), **smoking** (it decreases wound healing), **steroids** (increase wound dehiscence –impaired wound healing- & accelerate wound infection).



Patient Characteristics

- Age
- Diabetes
- Smoking
- Steroid Use
- Malnutrition
- Obesity
- Altered immune response
- Prolonged preoperative stay
- Preoperative colonization with *S. aureus*
- Perioperative transfusion
- Coexistent infection at a remote body site

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Smoking

- Cigarette smoking was an independent risk factor for SSI
- Nicotine use delays primary wound healing
- ***Cessation of smoking is recommended***

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Diabetes

- Significant relationship between increasing levels of HgA1c and SSI rates
- Increased glucose levels (>200 mg/dL) in the immediate postoperative period (<48 hours) were associated with increased SSI risk
- ***Delay elective procedures until after sugar levels have been controlled***

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Steroid Use

- Patients who are receiving steroids or other immunosuppressive drugs *may* be predisposed to developing SSI *but* the data supporting this relationship are contradictory.

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Body temperature is an important host risk factor, you should control hypothermia..**

Core Body Temperature

- Better intraoperative and postoperative temperature control of the patient may reduce the risk of SSI.
- Patients maintained at higher core temperature ($> 36.5^{\circ}\text{C}$) had an SSI rate lower than those maintained at lower core temperature.

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Mild hypothermia



NHS Supply Chain

- Promotes bleeding and increases transfusion requirement.
- Prolongs drug metabolism.
- Increases incidence of wound infections.
- Increases postoperative recovery.
- Increases the risk of morbid myocardial events.
- Prolongs hospitalisation.
- Impaired immune function.
- Increase cost.

www.supplychain.nhs.uk

3 independent variables are related to SSI:

1. contamination. 2. ASA > 2. 3. length of the operation. **

National Nosocomial Infection Surveillance (NNIS) Risk Index

3 independent variables associated with SSI risk

- ⊙ Contaminated or dirty/infected wound classification
- ⊙ ASA score > 2
- ⊙ Length of operation > 75th percentile of the specific operation being performed

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ASA Physical Status Classification

ASA Class	
Class I	A patient in normal health
Class II	A patient with mild systemic disease resulting in no functional limitations
Class III	A patient with severe systemic disease that limits activity, but is not incapacitating
Class IV	A patient with severe systemic disease that is a constant threat to life
Class V	A moribund patient not likely to survive without the operation
Class VI	A patient already declared brain dead whose organs are being removed for donor purposes

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All of that is important in management to give antibiotics or not, the idea of giving prophylaxis is to decrease microbial load at Sx site & to maintain adequate tissue level at time of the Sx, if it's a long Sx repeat the dose.

Ideally before 60 mins from Sx, a single dose before 24 hours & not more, if you extend it more than 24 hrs it will be therapeutic.

Antimicrobial prophylaxis

- Administration of an antimicrobial agent or agents before initiation of certain specific types of surgical procedures to reduce the number of microbes that enter the tissue or body cavity
- Used to reduce the risk of SSI

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Antimicrobial prophylaxis

- USE AN ANTIMICROBIAL AGENT BASED ON ITS EFFICACY AGAINST THE MOST COMMON PATHOGENS CAUSING SSI FOR A SPECIFIC OPERATION
- GIVEN AS A SINGLE DOSE OR CONTINUED FOR LESS THAN 24 HOURS

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Antimicrobial prophylaxis

- Time the infusion of the initial dose of antimicrobial agent so that a bactericidal concentration of the drug is established in serum and tissues by the time the skin is incised.
- The optimal time for administration of preoperative doses is **within 60 minutes before surgical incision**.

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A list of how each center/system has its own strategy according to its common organisms & their resistance, there is a guideline to follow when doing a Sx in that center/system.

Example from internet & not to memorize for sure.

AMA Guidelines for SSI's

Surgery	Common organisms	Peri-op antimicrobial prophylaxis
Surgery of Intestinal or Genitourinary Tract	Gram Negative Bacilli, anaerobes	1st Line: Piperacillin-tazobactam 3.375 g every 6 h or 4.5 g every 8 h IV Or Imipenem-cilastatin 500 mg every 6 h IV 2nd Line (as in case of non ESBL organisms) : Ceftriaxone 1 g every 24 h + metronidazole 500 mg every 8 h IV
Surgery of trunk or extremity away from axilla or perineum	<i>S. aureus</i> , CoNS	1st Line: Oxacillin/ nafcillin 2 g every 6 h IV Or Cefazolin 0.5-1 g every 8 h IV 2nd Line: Cefotaxime 500 mg every 6 h IV
Surgery of axilla or perineum	<i>S.aureus</i> , GNBs, anaerobes	1st Line: Metronidazole 500 mg every 8 h IV plus Levofloxacin 750 mg every 24 h 2nd Line: Metronidazole 500 mg every 8 h IV plus Ceftriaxone 1 g every 24 h

Again prophylaxis; 1 hr before Sx, the recommendations depend on the Sx procedure & the most common pathogens.

If you want to make an open heart Sx & the pt has UTI, this will increase the risk of having infection, so it's indicated to treat infection & to postpone Sx. Shaving "not to remove hair at



the operative site unless necessary & would interfere with the operation." & not by using razors.

Preoperative hair removal

- Preoperative hair removal by any means was associated with increased SSI rates.
- *No hair should be removed unless necessary.*

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Use the appropriate septic agents.

Colorectal Sx, abrasion is not any more indicated (chemical/mechanical).

Asepsis

- RIGOROUS ADHERENCE TO THE PRINCIPLES OF ASEPSIS BY ALL SCRUBBED PERSONNEL IS THE FOUNDATION OF SURGICAL SITE INFECTION PREVENTION.

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Operating room; air flow must be controlled as to move from clean "less contaminated" to "more contaminated" air & not the opposite. & not turbulent flow.



Operating room environment

- OPERATING ROOMS SHOULD BE MAINTAINED AT POSITIVE PRESSURE WITH RESPECT TO CORRIDORS AND ADJACENT AREAS.
- POSITIVE PRESSURE PREVENTS AIRFLOW FROM LESS CLEAN AREAS INTO MORE CLEAN AREAS.

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Operating room environment

- THE MICROBIAL LEVEL IN OPERATING ROOM AIR IS DIRECTLY PROPORTIONAL TO THE NUMBER OF PEOPLE MOVING ABOUT IN THE ROOM.
- **MINIMIZE PERSONNEL TRAFFIC DURING OPERATIONS**
- **KEEP THE DOORS CLOSED AT ALL TIMES**

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After Sx we should keep the wound dressing, & it should cover the wound at least 24-48 hrs, although it's not healed yet, but it's epithelialized so if you want to expose the wound & inspect it's safe to do that as epithelium is completed at this time.

Heba Tamerjan.

Third part of the lecture

In many surgical site infections, the responsible pathogens originate from the patient's endogenous flora. The causative pathogens depend on the type of surgery; the most commonly isolated organisms are Staphylococcus aureus, coagulase-negative staphylococci, Enterococcus spp. and Escherichia coli. Numerous patient-related and procedure-related factors influence the risk of SSI, and hence prevention requires a 'bundle' approach, with systematic attention to multiple risk factors, in order to reduce the risk of bacterial contamination and improve the patient's defences. The Centers for Disease Control and Prevention guidelines for the prevention of surgical site infections emphasise the importance of good patient preparation, aseptic practice, and attention to surgical technique; antimicrobial prophylaxis is also indicated in specific circumstances. Emerging technologies, such as microbial sealants, offer the ability to seal and immobilise skin flora for the duration of a surgical procedure; a strong case therefore exists for evaluating such technologies and implementing them into routine clinical practice as appropriate.



Antibiotic prophylaxis has been used effectively to prevent SSIs after appropriate operative procedures. Prophylaxis usually involves a single dose of antibiotic often given intravenously, close to the time of surgery (at induction of anaesthesia) and must be seen as different to treatment that entails a course of antibiotics over a period of time.

There is evidence that administration of antibiotic prophylaxis up to 2 hours preoperatively is associated with the lowest rates of infection in clean and clean-contaminated surgery.

Class 1 = clean --→ prophylactic antibiotic indicated

Class 2 = clean contaminated --→ prophylactic antibiotic indicated

Class 3 = contaminated -→ prophylactic antibiotic indicated

Class 4 = dirty infected -→ therapeutic antibiotics.

Wound Classification	Antibiotic	PCN Allergy
I	1 st generation Cephalosporin	Vancomycin Clindamycin
II-Biliary, GU, Upper Digestive	1 st generation Cephalosporin	Vancomycin Clindamycin
II-Distal Digestive	2 nd generation Cephalosporin	Aztreonam and Clindamycin/Flagyl
III/IV	Generally Therapeutic	

Done by: Sewar Al-Yacoub



