

Metode de administrare a antibioticelor in Ortopedie

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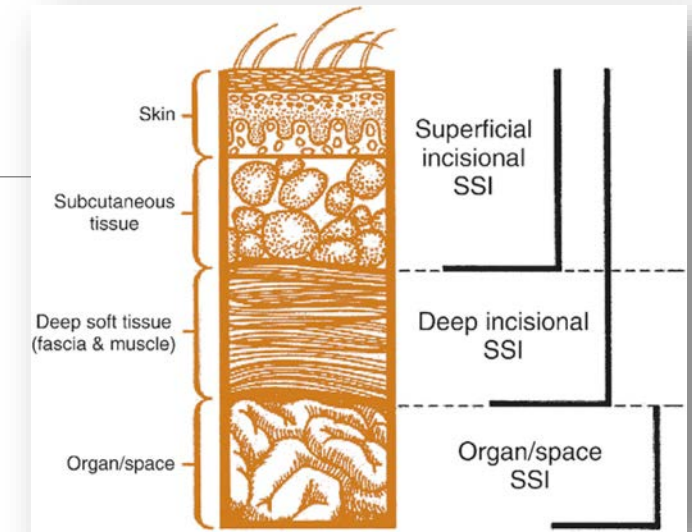
Necesitate

- Prevenția infecțiilor
 - Profilaxie perioperatorie
- Tratatamentul infecțiilor osteo-articulare și de părți moi
 - Antibioticoterapie empirică sau „ghidată” de antibiograma
 - Local și/sau general
 - i.v. și/sau per os (BIODISPONIBILITATE)
- Adjuvant în chirurgia tumorală
 - Efect citotoxic local



Chirurgie @ risc

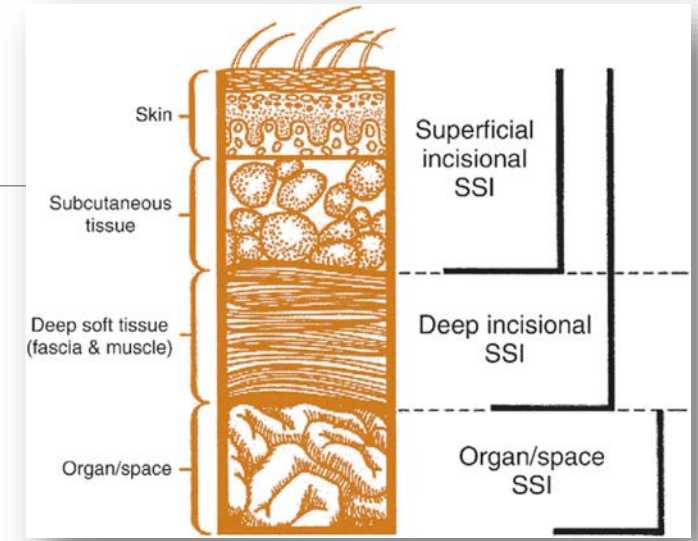
Gynecological Surgery				
Cesarean section	Enteric gram-negative bacilli, anaerobes, group B streptococci, enterococci	Cefazolin 2 g × 1	Can be given before initial incision or after cord is clamped	IA
Hysterectomy	Enteric gram-negative bacilli, anaerobes, group B streptococci, enterococci	Vaginal: cefazolin 1 g × 1 Abdominal: cefotetan 1 g × 1 or cefazolin 1 g × 1	Metronidazole 1 g IV × 1 is recommended alternative for penicillin allergy	IA
Head and Neck Surgery				
Maxillofacial surgery	<i>Staphylococcus aureus</i> , streptococci oral anaerobes	Cefazolin 2 g or clindamycin 600 mg	Repeat intraoperative dose for operations longer than 4 hours	IA
Head and neck cancer resection	<i>S. aureus</i> , streptococci oral anaerobes	Clindamycin 600 mg at induction and every 8 hours × 2 more doses	Add gentamicin for clean-contaminated procedures	IA
Cardiothoracic Surgery				
Cardiac surgery	<i>S. aureus</i> , <i>Staphylococcus epidermidis</i> , <i>Corynebacterium</i>	Cefazolin 1 g every 8 hours × 48 hours	Patients >80 kg (176 lb) should receive 2 g of cefazolin instead; in areas with high prevalence of <i>S. aureus</i> resistance, vancomycin should be considered	IA
Thoracic surgery	<i>S. aureus</i> , <i>S. epidermidis</i> , <i>Corynebacterium</i> , enteric gram-negative bacilli	Cefuroxime 750 mg IV every 8 hours × 48 hours	First-generation cephalosporins are deemed inadequate, and shorter durations of prophylaxis have not been adequately studied	IA
Vascular Surgery				
Abdominal aorta and lower extremity vascular surgery	<i>S. aureus</i> , <i>S. epidermidis</i> , enteric gram-negative bacilli	Cefazolin 1 g at induction and every 8 hours × 2 more doses	Although complications from infections may be infrequent, graft infections are associated with significant morbidity	IB



Chirurgie @ risc – “terenuł”

Patient	Operation
Age	Duration of surgical scrub
Nutritional status	Preoperative skin preparation
Diabetes	Preoperative shaving
Smoking	Duration of operation
Obesity	Antimicrobial prophylaxis
Coexisting infections at distal body sites	Operating room ventilation
Colonization with resistant microorganisms	Sterilization of instruments
Altered immune response	Implantation of prosthetic materials
Length of preoperative stay	Surgical drains
	Surgical technique

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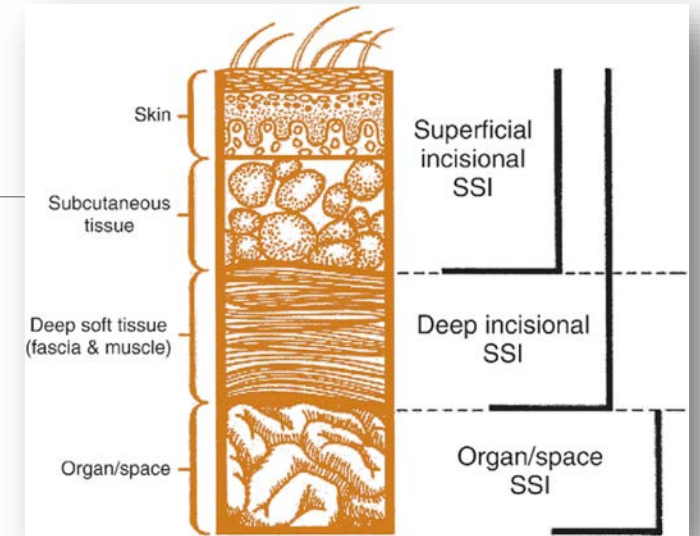


Chirurgie @ risc – “germenul”

Pathogen	Percent of Infections ^a
<i>Staphylococcus aureus</i>	20
Coagulase-negative staphylococci	14
Enterococci	12
<i>Escherichia coli</i>	8
<i>Pseudomonas aeruginosa</i>	8
<i>Enterobacter</i> species	7
<i>Proteus mirabilis</i>	3
<i>Klebsiella pneumoniae</i>	3
Other <i>Streptococcus</i> species	3
<i>Candida albicans</i>	3
Group D streptococci	2
Other gram-positive aerobes	2
<i>Bacteroides fragilis</i>	2

^aData reported by the National Nosocomial Infections Surveillance System from January 1992 through June 2004.

Adapted from reference 5.



Profilaxie perioperatorie

Uzual cu Cefalosporine de gen. III

Preferabil cu Cefalosporine de generatia II (antistaph +)

Adaptata la caz

- Primar
- Revizie
- Alergii medicamente
- Interacțiuni medicamente
- Comorbidități

◦ **PROTOCOL = 1 doză cu 1 oră anterior intervenției chirurgicale**

- Repetarea dozei după fiecare 2 ore de operație
- Continuata in postoperator încă 1-2 doze- cf posologiei

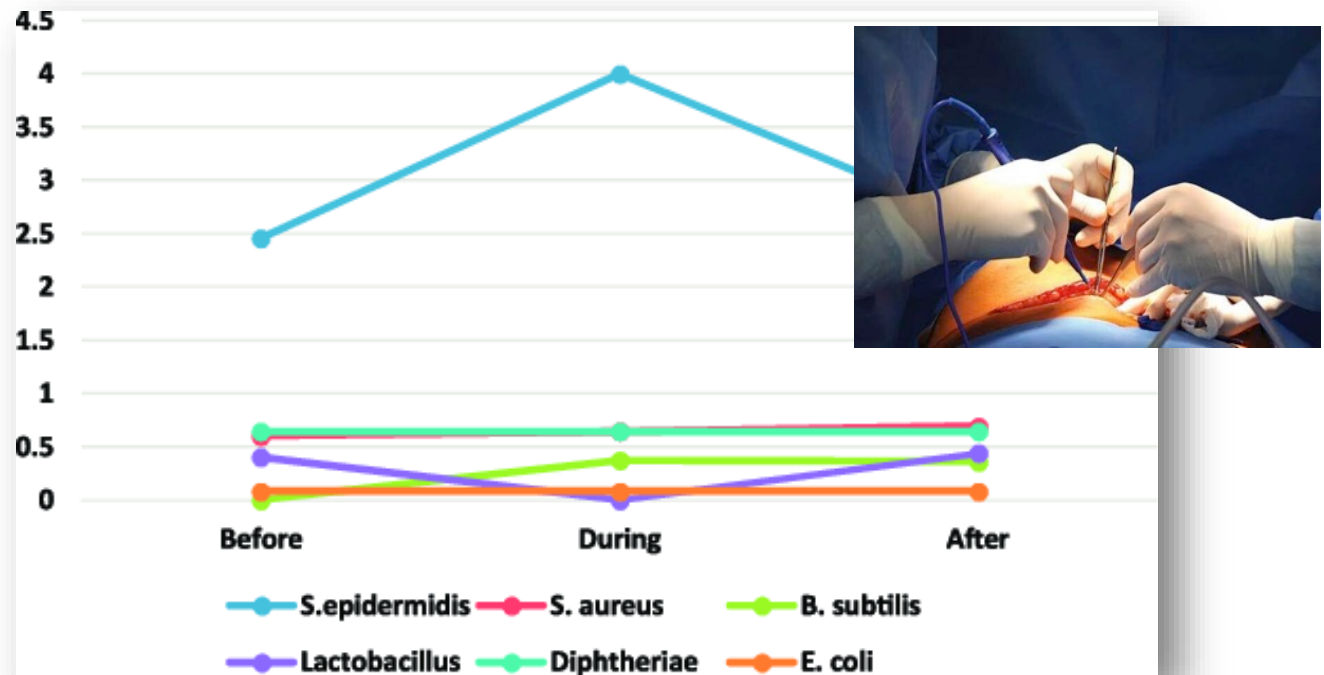
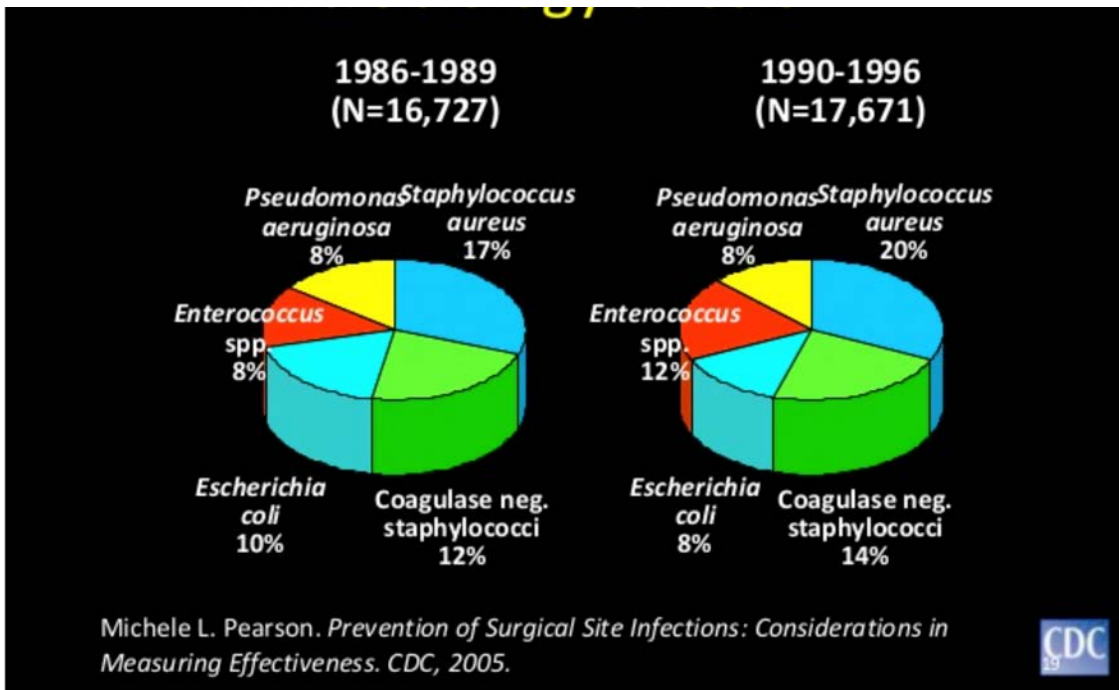


Type of Surgery	Recommended Antibiotic		Duration	References
	1 st Line	Penicillin allergy		
Emergency supply involving implants	Flucloxacillin 1g IV plus Gentamicin 5mg/kg IV	Teicoplanin 400mg IV		(Aujla <i>et al.</i> , 2013) (Joint Formulary Committee, 2017a)
Elective joint replacement surgery	Cefuroxime 1.5g IV on induction	Teicoplanin 400mg IV		(Prokuski, 2008)
Other elective orthopaedic surgery involving implants	Cefuroxime 1.5g IV on induction single dose	Teicoplanin 400mg IV		(Bryson <i>et al.</i> , 2016) (Joint Formulary Committee, 2017b)
Shoulder surgery	Co-amoxiclav 1.2g IV	Teicoplanin 400mg IV		(Nanchahal <i>et al.</i> , 2009)

Antibioticoterapie empirică sau „ghidată” de antibiograma

După prelevarea probelor bacteriologice!

- Inițierea antibioticoterapiei în funcție de microorganismul cel mai frecvent incriminat în patologie



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- Ajustarea ulterioară în funcție de rezultatul culturilor

Literature Review Article Full-text available

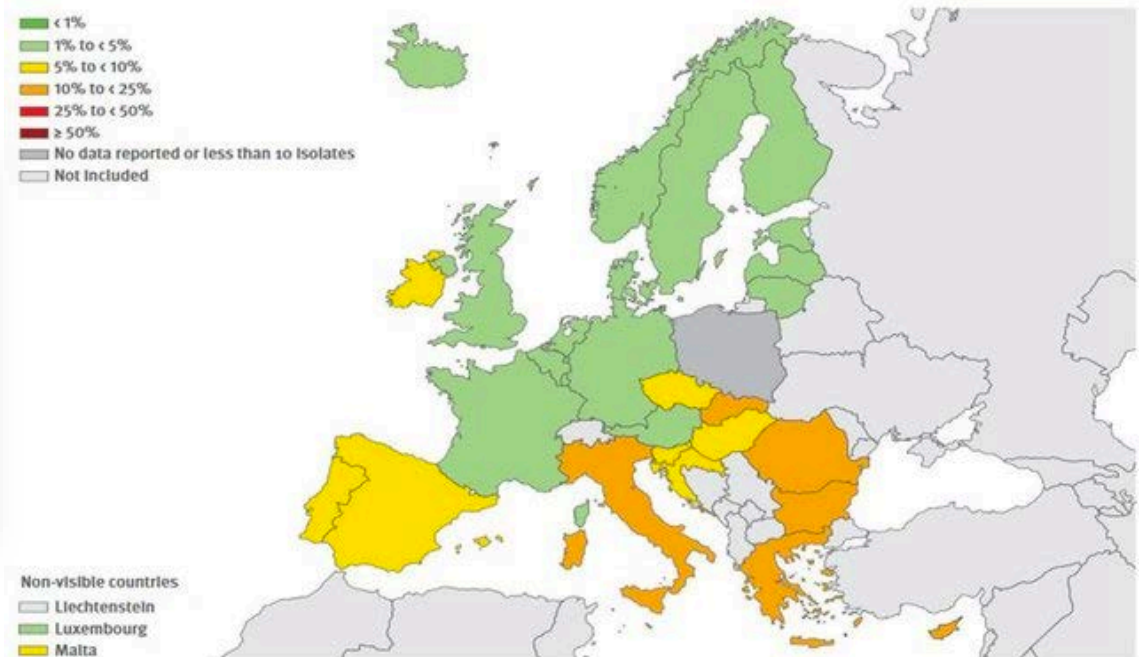
Surveillance and Control of Antibiotic Resistance in the Mediterranean Region

July 2016 · Mediterranean Journal of Hematology and Infectious Diseases 8(1):e2016036 · [Follow journal](#)

DOI: [10.4084/mjihid.2016.036](https://doi.org/10.4084/mjihid.2016.036)

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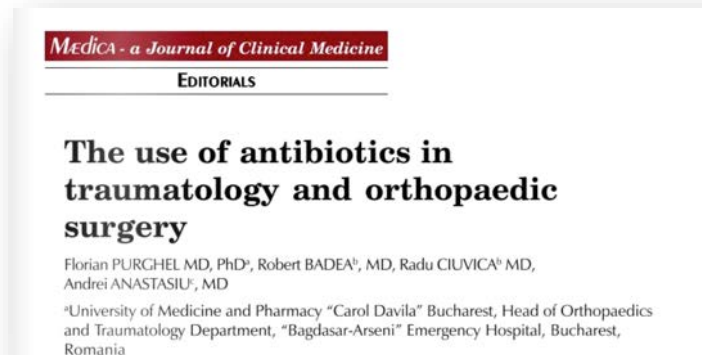


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Doza & Durata în funcție de patologie



Fracture type	Recommended antibiotic
Closed	First generation cephalosporin (Cefazolin, 2g i.v. loading dose, 1g i.v. every 8 hours for 3 doses)
Open type I and II	First generation cephalosporin (Ancef 2g i.v. loading dose, 1g i.v. every 8 hours for 3 doses)
Open type III	Third generation cephalosporin or first generation cephalosporin + aminoglycoside (gentamicin or tobramycin)
All open fractures	Add penicillin Add tetanus prophylaxis

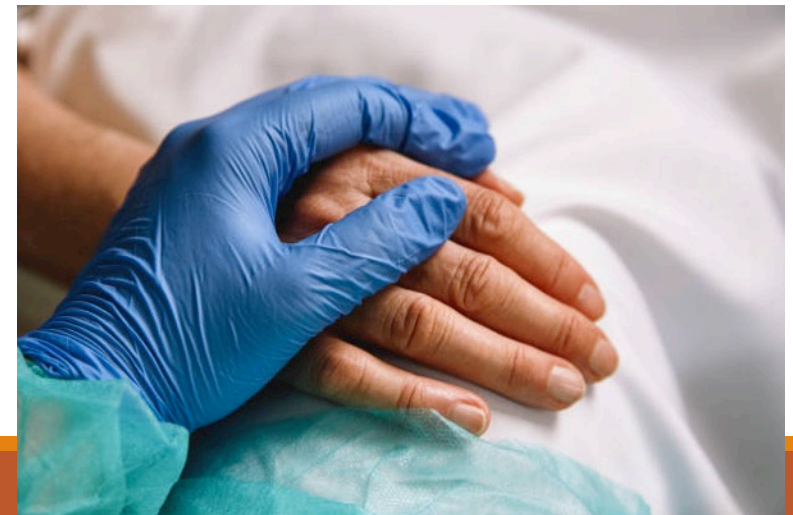
TABLE 1. Choice of antibiotic therapy for closed and open fractures

Local !

După o debridare chirurgicală minunțioasă

Incorporat în medii de vehiculare
(BIODISPONIBILITATE & C% TERAPEUTICA)

- Gelaspon
- Ciment ortopedic
 - Definitiv
- Grefă osoasă morcelizată



Stimulan[®] Kit
SYNTHETIC HIGH PURITY CaSO₄
Fully setting paste with individual pelletizing kit



5, 10cc packs
Mixed for 1-2 minutes to become paste
Sets in-vivo in 15 minutes at body temperature

T & C Apply!!



Utilizările cimentului ortopedic impregnat cu antibiotic

Fracturi deschise

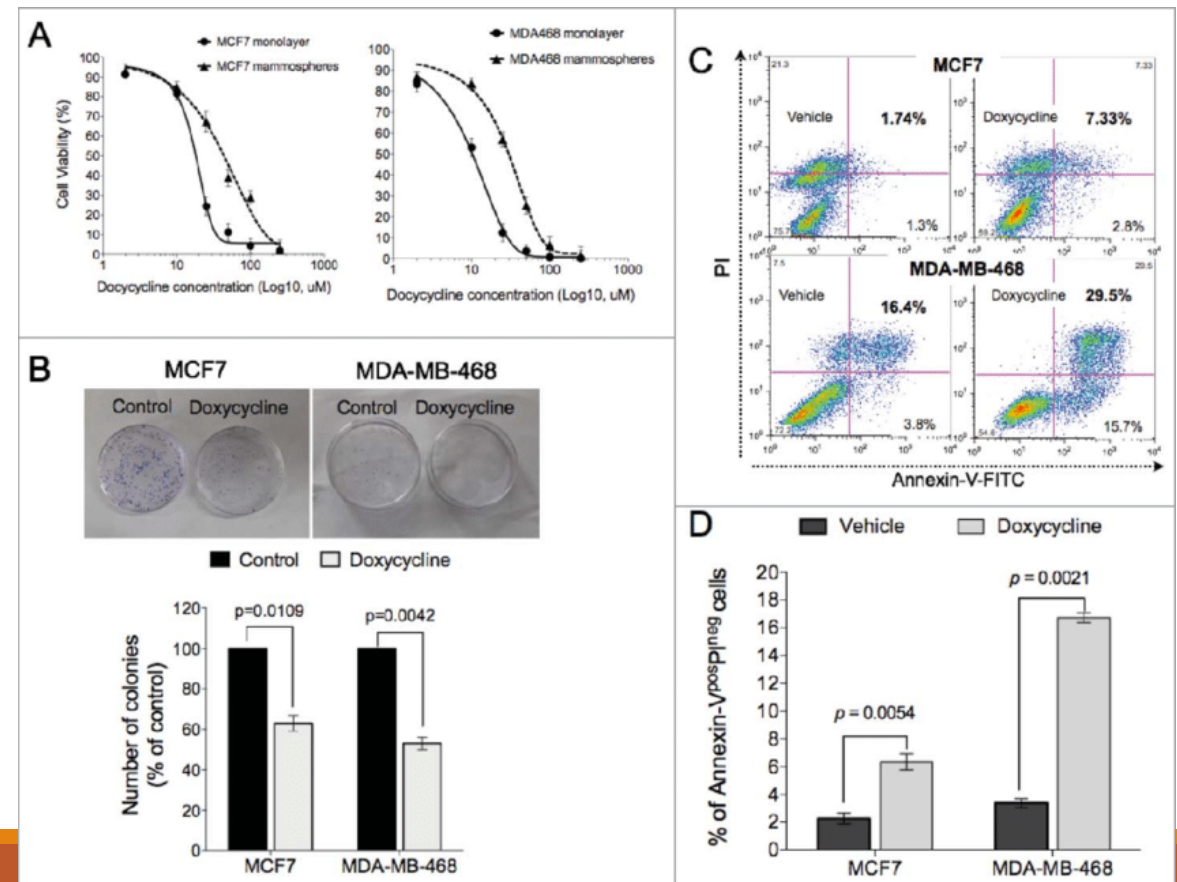
Revizii ale implantelor endoprotetice

- Etapă intermediară
- Cimentare definitivă



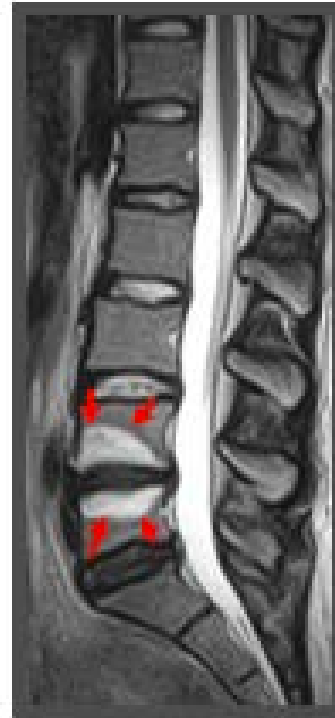
Adjuvant în chirurgia tumorală

Doxiciclina manifestă efecte citotoxice locale asupra celulelor tumorale restante atunci când este incorporată în grefa osoasă morcelizată



Caz clinic

Pacienta RM 65 ani, durere lombară
auto-tratată empiric cu antibiotice...fără
efect



T2



T1



Caz clinic

Pacient DL 72 ani, durere picior după tratament pentru infecție urinară cu Ciprofloxacin



Got Antibiotics?



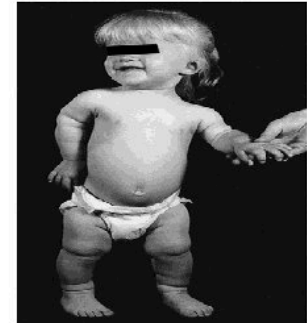
[Click Here To Learn More](#)

Achilles Tendon Rupture is a Side Effect of Avelox, Cipro, and Levaquin

Year/Study	Model used	Drug	Outcome
1971/Gudmundson ⁴⁹	Mice	Oxytetracycline	<ul style="list-style-type: none"> • No significant effect
1996/Mont ⁸³	In vitro	Ciprofloxacin	<ul style="list-style-type: none"> • Inhibition of cellular proliferation • No effect on proteoglycans synthesis, morphology and stain pattern
2000/Huddleston ⁶⁰	Rats	Ciprofloxacin	<ul style="list-style-type: none"> • Decreased torsional strength and stiffness • Alterations of cartilage morphology
2002/Alkan ³	Rats	Doxycycline	<ul style="list-style-type: none"> • No effect
2002/Lamparter ⁷²	Rats	Doxycycline	<ul style="list-style-type: none"> • Inhibition of matrix metalloproteinases
2003/Perry ⁹²	Rats	Levofloxacin and Trovafloxacin	<ul style="list-style-type: none"> • Decrease in strength • Inferior quality of callus
2004/Kim ⁶⁹	Rats	Gentamicin and Tetracycline	<ul style="list-style-type: none"> • Decreased bone formation
2004/Haleem ⁵³	Rats	Gentamicin and Vancomycin	<ul style="list-style-type: none"> • No effect encountered
2005/Tuncay ¹¹⁸	Rats	Norfloxacin, Ofloxacin, Pefloxacin and Ciproxacin	<ul style="list-style-type: none"> • Retardation of healing occurred in all fluoroquinolone treated animals • Differences in terms of healing inhibition were encountered

Quinolones And Fluoroquinolones Adverse Effects

- **Abnormalities of bone and cartilage formation.**
(Cause cartilage damage in weight bearing joints in animal studies)



Qs and FQs are contraindicated in children under 18 and pregnant women!!!

Take Home

- Orthopaedic surgeons must have an awareness of the efficacy and indications for commonly used antibiotics to ensure good clinical care in an era of evolving antibiotic resistance.

