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HIGHER EDUCATION PAIN MEDICINE PROJECT

Strengthening Capacities for Higher Education of Pain
Medicine in Western Balkan Countries - HEPMP

Terapija bola

SEMINAR

25. Januar 2020.

Fakultet medicinskih nauka
Univerziteta u Kragujevcu

Interventne procedure u lečenju bola

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Lečenje hroničnog bola u Srbiji

- Nakon nepotpune rezolucije hroničnog bola (npr. bol u leđima) izabrani lekar upućuje bolesnika neurohirurgu/neurologu/ortopedu
- Pacijenti takođe traže opcije: kiropraktičar, homeopatija..
- Hirurzi- hirurški zahvat- efikasnost krajnje kontroverzna

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Ishodi lečenja

- Epiduralna fibroza nakon op uobičajena- bol i ischemija nervnih korenova
- bol na susednim nivoima kičme skoro neizbežan, skoro nemoguće le bilo kojom metodom
- produženo bolovanje, neželjeni efekti lekova..



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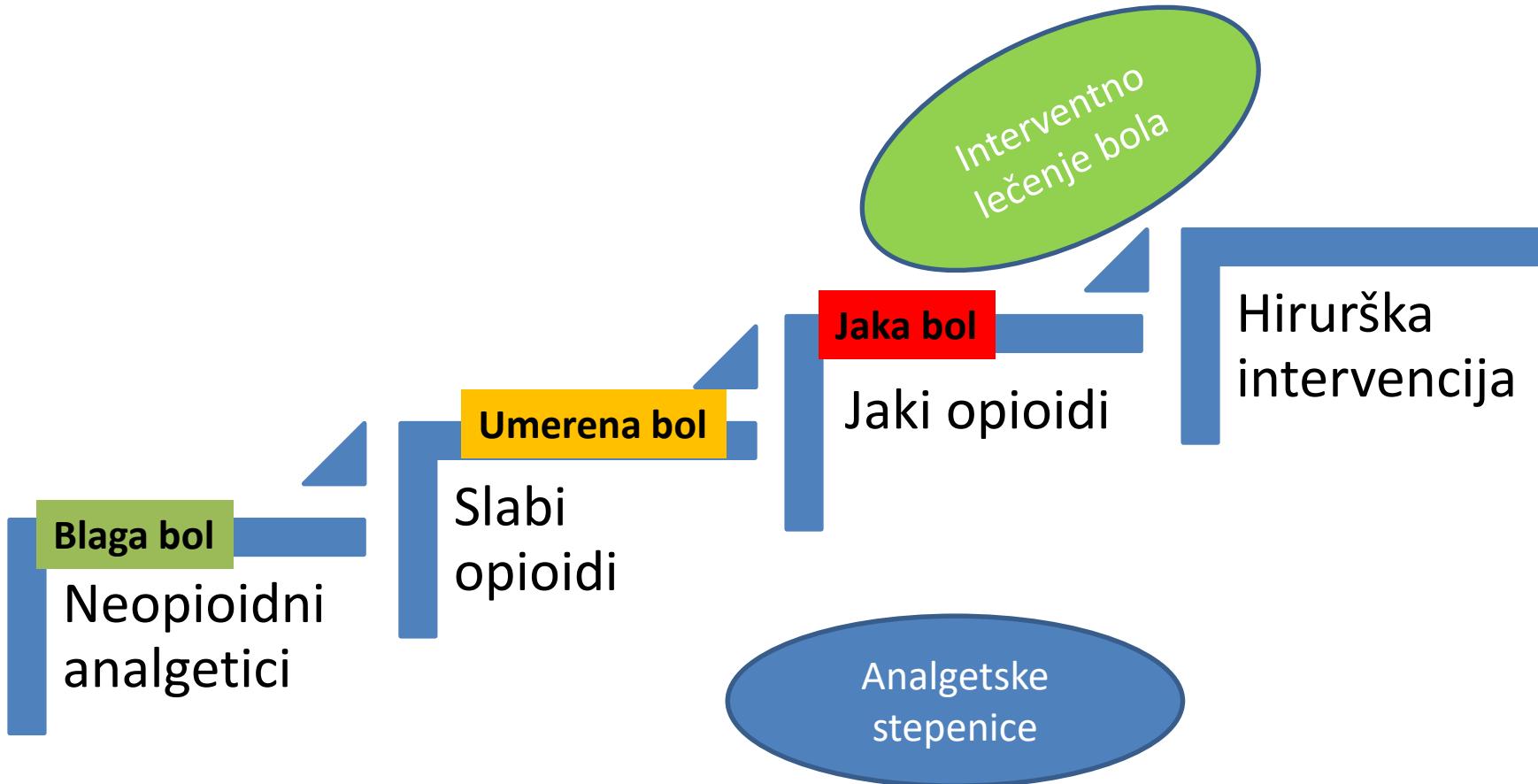
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- Hirurška intervencija loša opcija

Šta je **interventno lečenje bola?**

- Primena minimalno invazivnih tehnika u cilju smanjenja ili eliminisanja bola od strane specijalno obučenih specijalista

Mesto interventnih procedura, ranije



Sada: Analgetski lift

The Chronic Pain Treatment Continuum

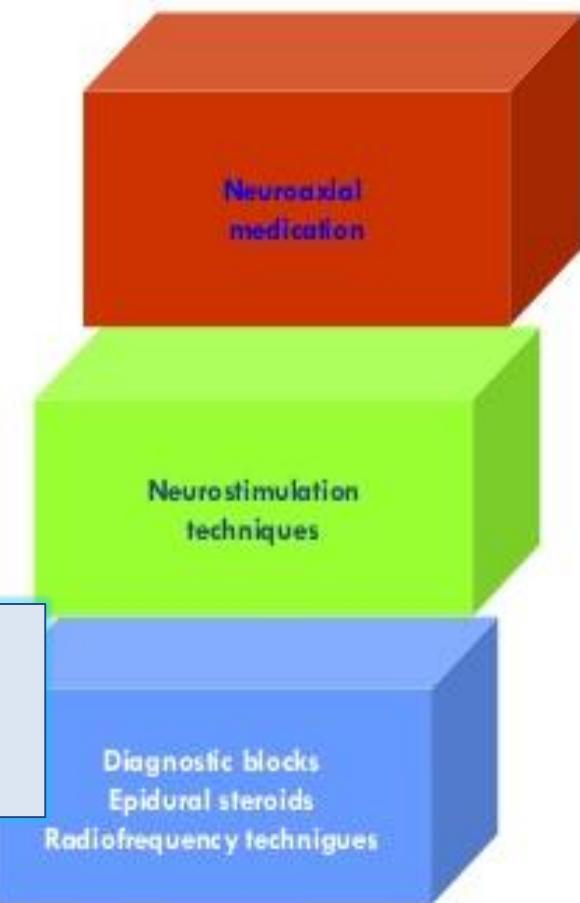


ANALGETSKI LIFT

Jaki opioidi i invazivne procedure ODMAH
u odnosu na intenzitet bola

ADJUVANT ANALGESICS + PATIENTS EDUCATION

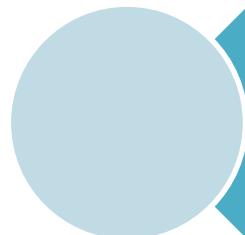
Interventional Therapies



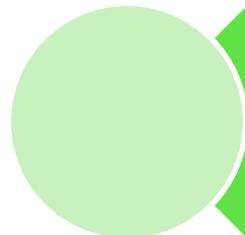
Interventno lečenje bola u Srbiji

- **Nedostatak obučenih specijalista za ove procedure**
- Nedostatak obučenih radioloških tehničara (asistiraju prilikom fluoroskopije) i sestara koje prate oporavak bolesnika
- Nedostatak prostora, opreme i lekova
- Koncept Jednodnevne (ambulantne) “hirurgije” ?

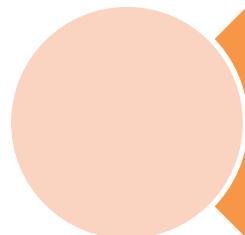
Tri ključna koncepta ILB



Identifikacija i tretman uzroka bola,
po algoritmu minimalno invazivnih
procedura



Adekvatno tretiranje simptoma
(medikamentozna, fizikalna Th)



Edukacija i promena stila života
bolesnika, fizikalna Th u cilju maks
funkcije i sprečavanja recidiva bola

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Vrste intervencija u okviru ILB

- Prekid prenošenja bolnog signala
- Aplikacija leka na mesto dejstva (pumpe)
- Neuroaugmentacija-stimulacija kičmene moždine, periferna nervna stimulacija
- Korigovanje patološkog substrata

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Interventno lečenje bola

Osnovne

- Blokada triger tačaka
- Periferni nervni blokovi
- Epiduralne injekcije i neuroaksijalni nervni blokovi
- Blok gangliona stelatuma
- Neurolitički blokovi

Napredne

- Procedure na disku
- Radiofrekventna ablacija
- Epiduroskopija
- Stimulacija kičmene moždine
- Implantacija sistema za isporuku lekova

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Interventno lečenje akutnog bola postoperativni, posttraumatski

- Kontinuirana epiduralna analgezija (PCEA)
- Spinalna analgezija
- Periferni nervni blokovi (jednokratni, kontinuirani)

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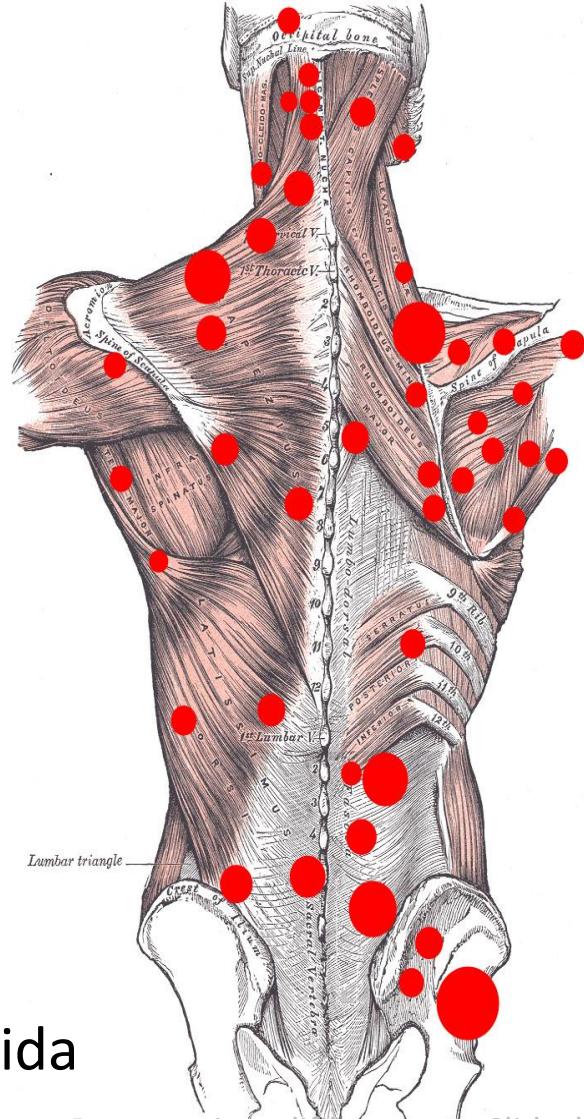
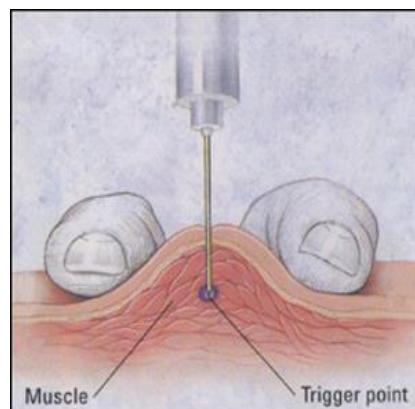
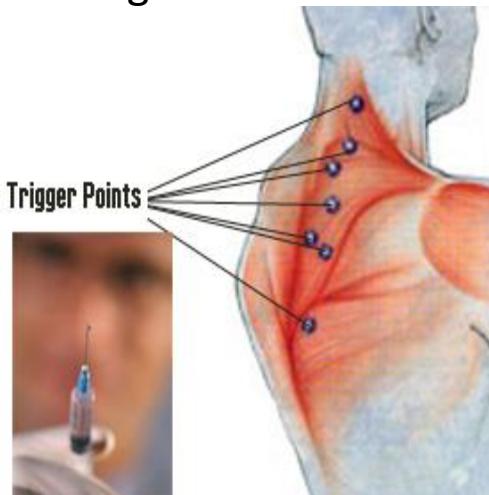
Prednosti

- Bolja analgezija
- Manje doze lekova, manje neželjenih efekata
- Manja incidenca duboke venske tromboze i plućne embolije
- Manji gubitci krvi intraoperativno
- Ranija peristaltika
- Brže pokretanje bolesnika
- Bolja supresija neuro-endokrinog stres odgovora

Lečenje hroničnog bola

Muskulofascijalni bolni sindrom

Blokada triger tačaka



Injekcija lokalnog anestetika i kortikosteroida
u tačku okidača bola, ponavlja se 3-7 puta

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Nervni blokovi

- **Dijagnostički**- lokalni anestetik da se potvrди mehanizam, odnosno simulira efekat terapije
- **Terapijski**- prekida se put prenosa bola, privremeno (lokalni anestetik) ili trajno (litički agens, krio, radifrekventna Th), ili se smanjuje inflamacija (kortikosteroidi)

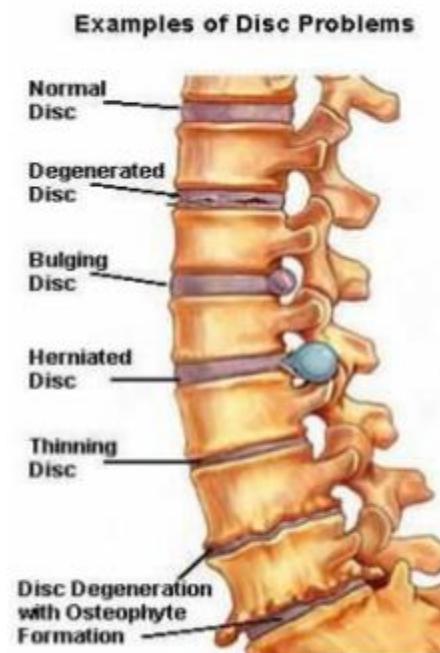
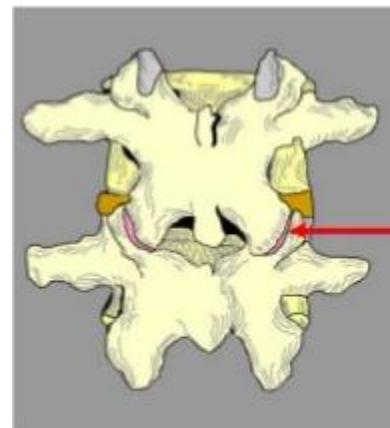
Bol u vratnom i leđnom delu kičme

Kod svih ljudi tokom vremena dolazi do degenerativnih oštećenja pokretnih segmenata kičmenog stuba

- **Fasetni zglob**
- **Inervertebralni disk**
- **Sakroilijačni zglob**
- **Inflamacija nerava**
(radikularni bol)
- Postoje definisani protokoli postupanja zavisno od uzroka bola

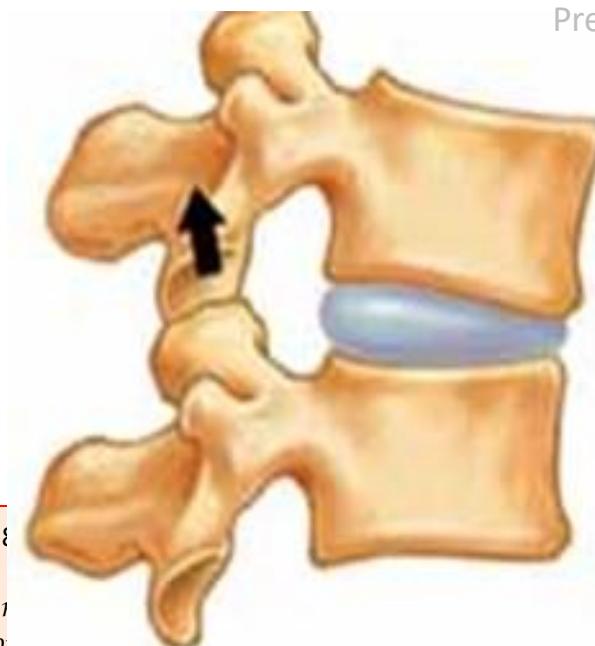
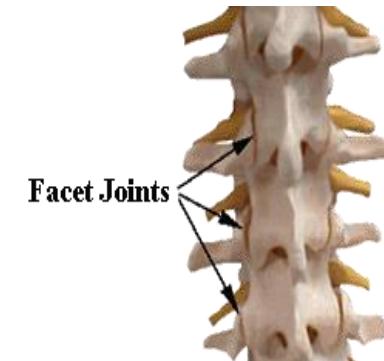
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Basic functional units of spine—motion segments—consist of two posterior zygapophyseal (facet) joints and an intervertebral disc, forming a tri-joint complex

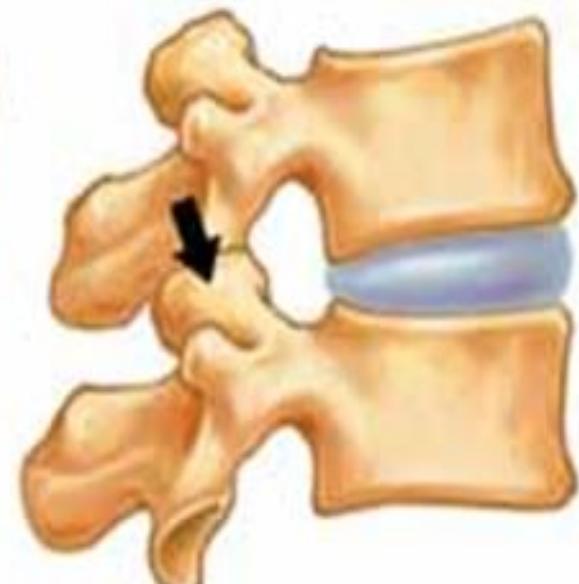


Fasetni sindrom

- Uzrok bola u 40% slučajeva
- Stalni bolovi pogoršani rotacijom i istezanjem
- Bol zrači u nogu ili glutealni predeo,
- Osteljivost u predelu zglobova ,
- Paravertebralni grč mišića



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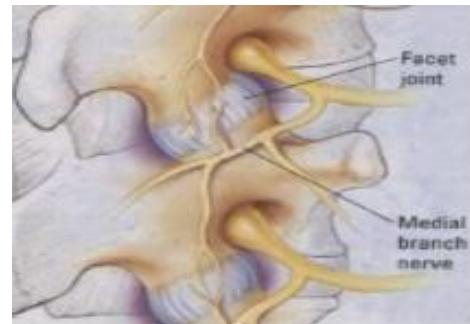


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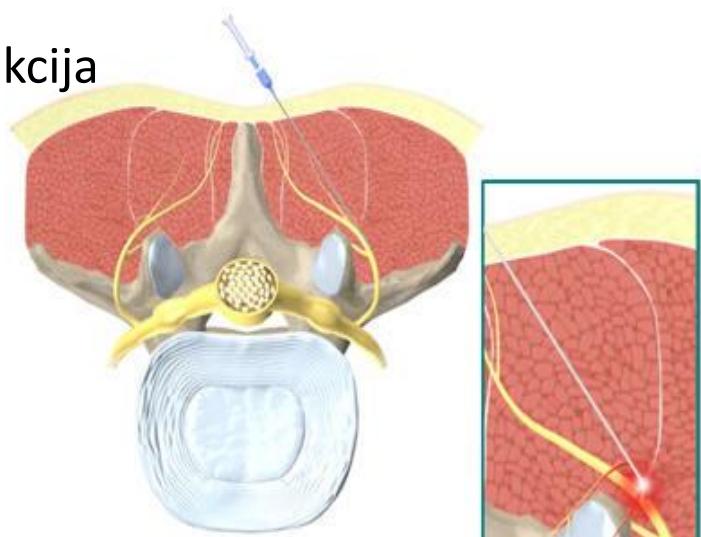
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Radiofrekventna ablacija nerava (RFA)

- blokiranje (anestetik), ili **radiofrekventna neurotomija (destruktivna)** dve medialne grane dorzalnog spinalnog nerva koje inervišu svaki fasetni zglob. Polutrajno se prekida kondukcija bolnog impulsa kroz C vlakana
- Oporavak nerva nakon 6-18 meseci
- Selektivna pulsna radifrekventna TH (**nedestruktivna**) određenog nervnog korena



Microelectrode inserted



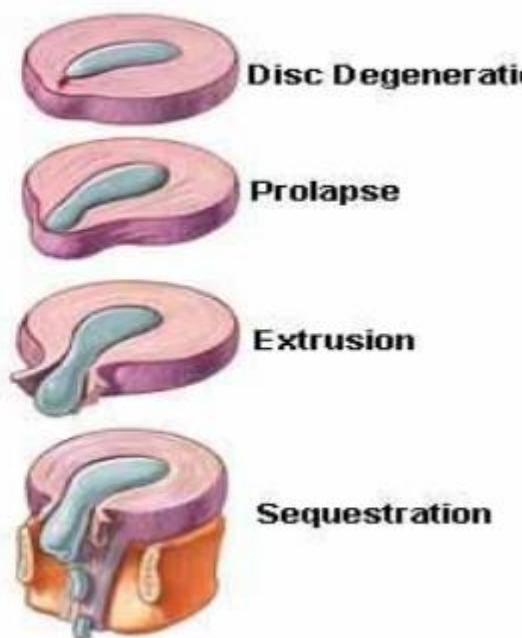
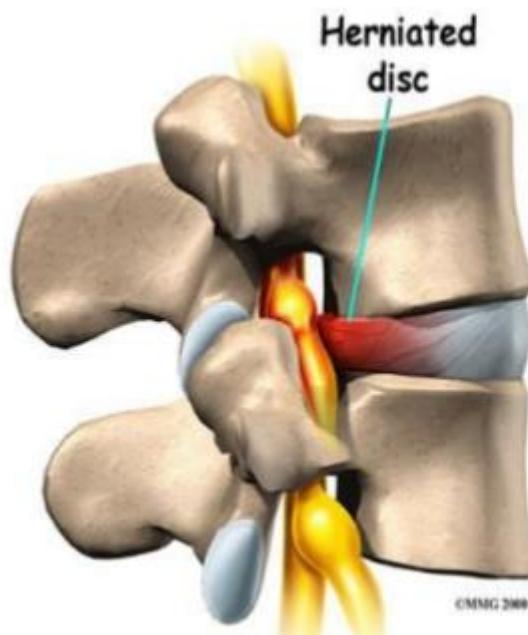
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Radiofrequency applied

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Diskopatija



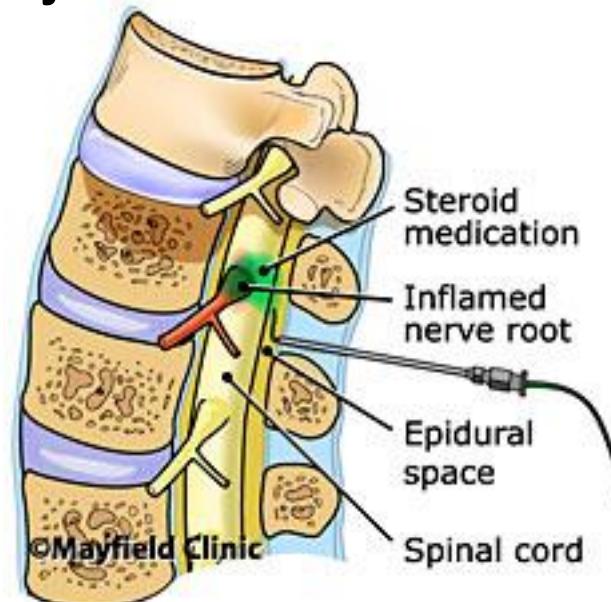
- Uzrok bola u 20% slučajeva

Hernijacija- iritacija okolnog tkiva- inflamacija
Protruzija- pritisak na kičmenu moždinu , nervni koren
Pucanje fibroznog prstena- hemijska iritacija, edem

Bol u ledjima

Epiduralna injekcija steroida

- Smanjuje inflamaciju
- Translaminarni ili transforamenski pristup uz fluoroskopsko navođenje – precizna aplikacija na mesto patološkog procesa



Dg:diskografija+ Th

- Ubrizgavanje kontrasta u disk uz rendgensko navođenje-morfologija diska, provokacija bola
- Postproceduralna RTG ili CT dokumentuje leziju diska
- Kandidat za intradiskalnu **elektrotermalnu Th**, anuloplastiku, nukleoplastiku, ozon nukleoliza, minimalno invazivna perkutana dekompresija diska (sitni se nuklus pulposus i isisava napolje)

Epiduroliza

- Epiduralna adhezioliza nakon potvrde fibroze epidurogramom ili tokom epiduralne endoskopije. Aplicira se fiziološki ili hipertoni NaCl rastvor, sa ili bez hijaluronidaze

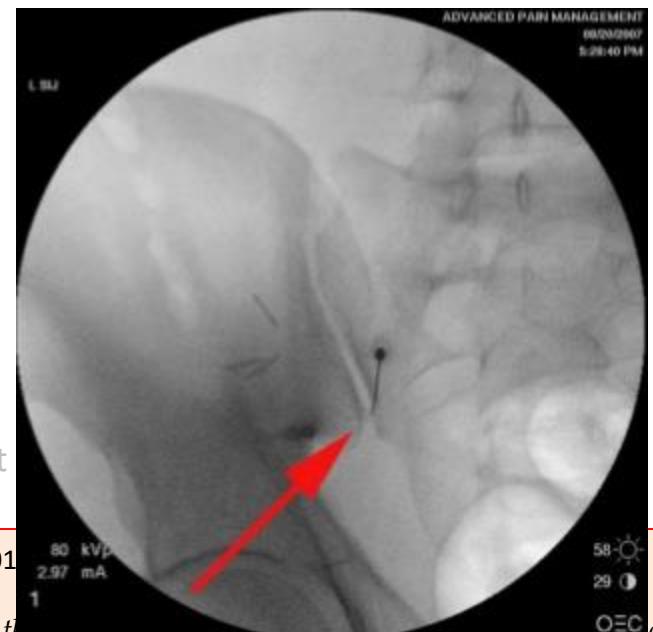


Normalni epidurogram-obrnuto božićno drvo
Kontrast ulazi u duralne ekstenzije oko svakog
nervnog korena. Defekt- fibroza

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Blok sakroilijačnog zgoba

- Uzrok bola u donjem delu leđa u 13-20% slučajeva
- Perkutana **radifrekventna neurotomija**
- **Injekcija kortikosteroida** u sakroilijačni zglob obezbeđuje dugotrajno oslobođanje od bola



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Perkutana vertebroplastika

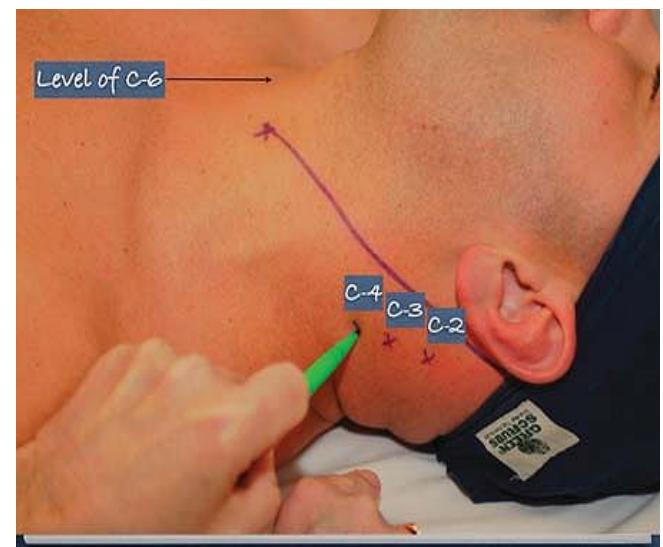
- Kod kompresivne **frakture pršljena** usled osteoporoze, karcinomskih metastaza, hemangioma
- Igla se pod rendgenom uvodi u pršljen i ubrizgava se viskozan **koštani cement**
- Cement ne sme da dođe u kontakt sa nervima
- Stabilizacija i oslobođanje od bola

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Blokovi za glavobolju: okcipitalni i blok C2 nervnog korena



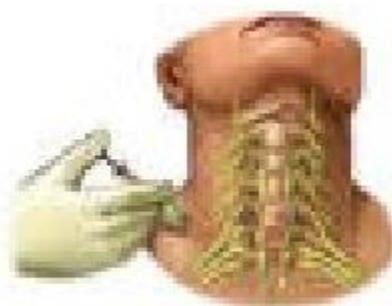
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Simpatički blok

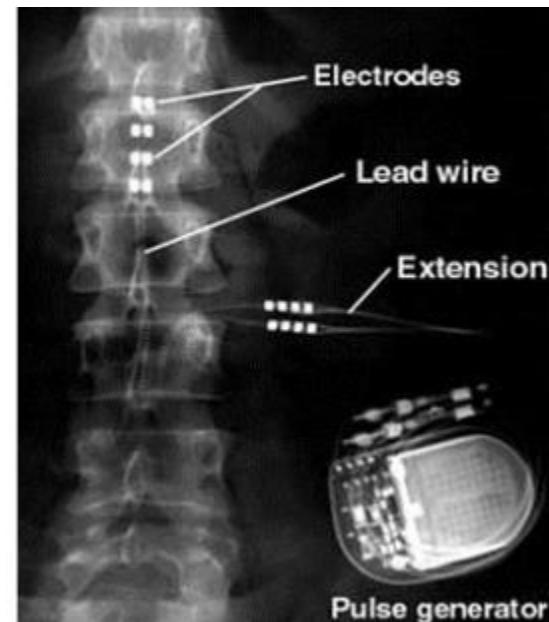
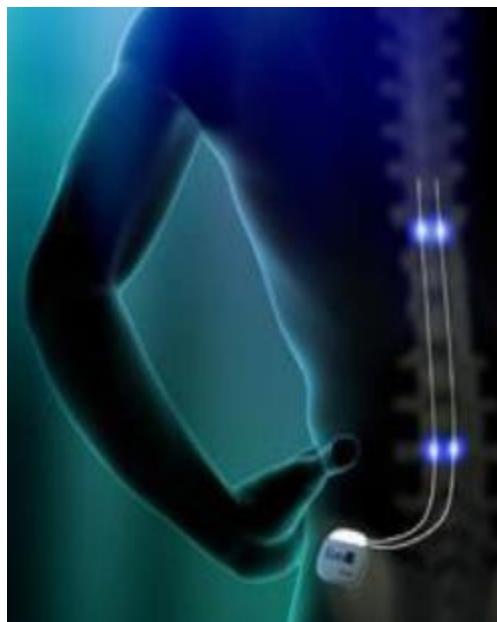
- Blokada simpatikusa u predelu vrata - Stellate ganglion ili u lumbalnoj regiji
- Uglavnom **dijagnostički** za potvrdu **kompleksnog regionalnog bolnog sibdroma**
- **Terapijski:** KRBS gornjih i donjih ekstremiteta, vaskularna insuficijencija, refrakterna angina; Lokalni anestetik ili neuroliza



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Stimulacione (neuromodulacija) tehnike

- Stimulacija kičmene moždine
- Periferna nervna stimulacija



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Interventne procedure u lečenju karcinomskog bola

- Često najbolji a nekada i jedini način tretiranja karcinomskog bola
- Nakon procedure bolesnici su često mesecima bez bola
- Omogućava se značajno smanjenje doze opioida, i veoma povećava odgovor na opioide i druge analgetike

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Interventne procedure u lečenju karcinomskog bola

Nervni blokovi

- Visceralni bol kod karcinoma, se prenosi **simpatičkim** nervnim sistemom
- Visceralni organi su obično inervisani sa više nervnih struktura tako neuroliza često ne dovodi do potpunog oslobođanja od bola

Epiduralna i intratekalna primena lekova

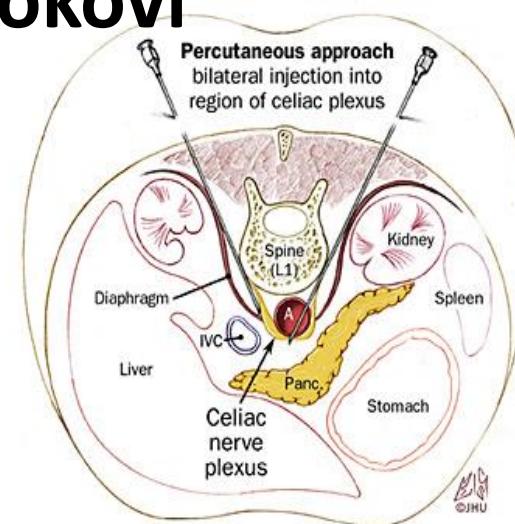
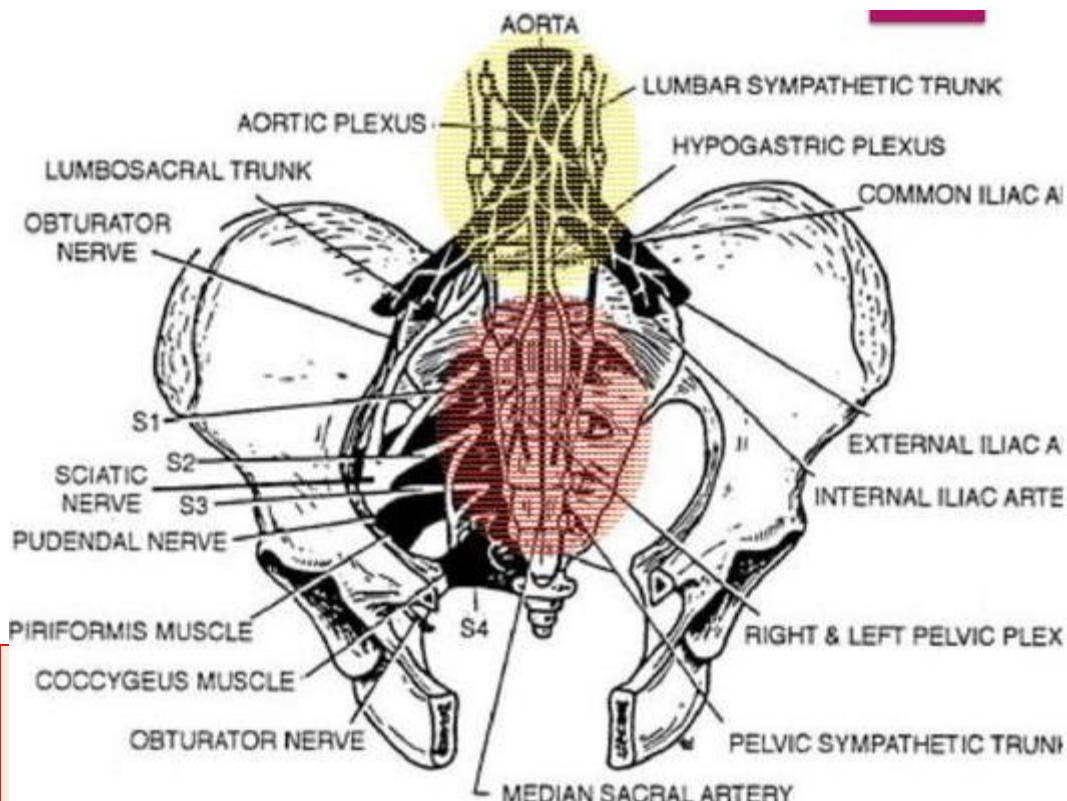
- Izraženi neželjeni efekti medikamentozne terapije

Stimulacija kičmene moždine

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Destruktivni simpatički nervni blokovi

- Pankreas, gornji abdomen
(želudac, jetra, dist. ezofagus)
- Blok pleksusa celijakusa



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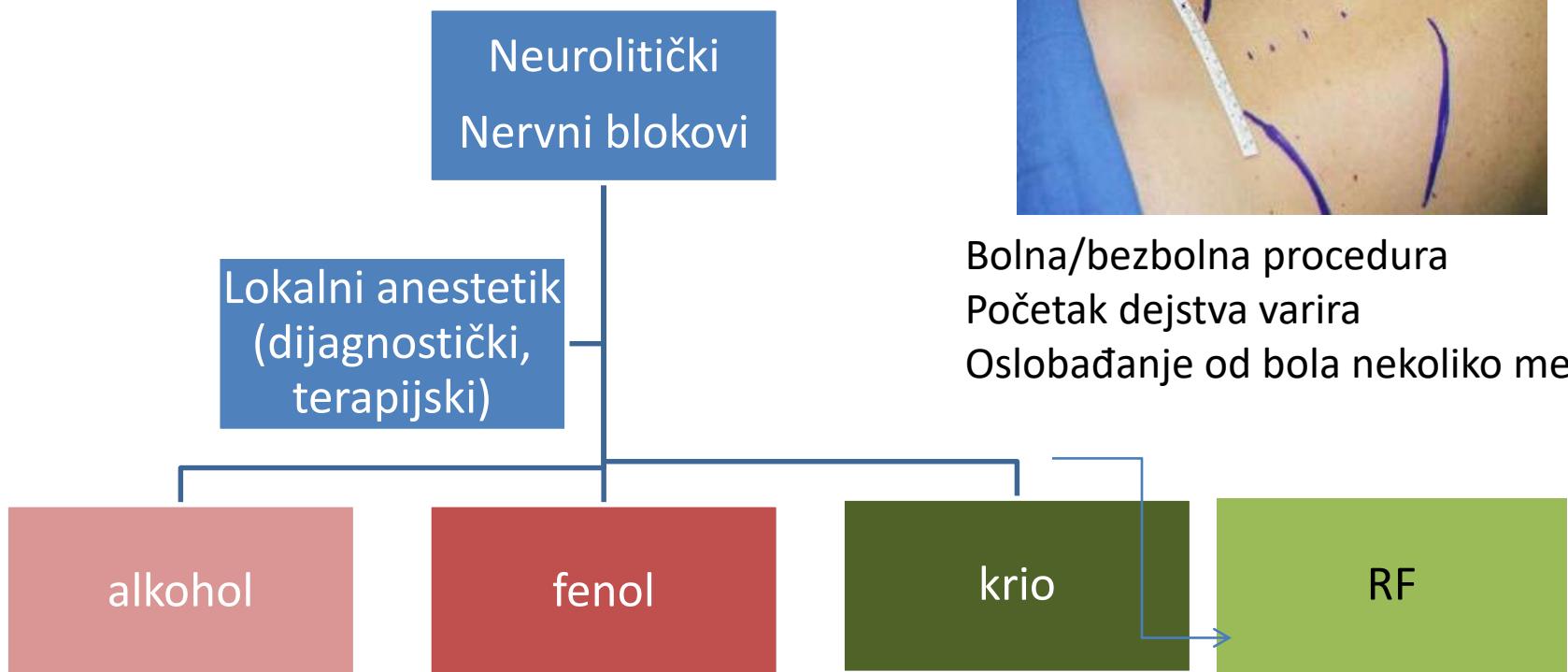
- Donji abdomen (pelvični bol)
- Blok gornjeg hipogastričnog pleksusa

- Interkostalni nervni blokovi
- Periferni nervni blokovi

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Nervni blokovi



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Spinalna primena lekova

- Očekivano trajanje života < 3 meseca
- Epiduralno, intratekalno (tunelirani kateter)
- Morfin:

3mg PO=1mg IV=0,1mg epidural=0,01mg spinal

Intratekalna isporuka lekova- pumpa

- Očekivano trajanje života>
3 meseca
- Kontinuirana isporuka leka
- Znatno manje doze i
neželjeni efekti
- Producava život
- Konfornije za bolesnika
- skupo



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zaključak

- Deo multimodalnog pristupa
- Ciljani tretman uzroka (mehanizma) bola
- Poštovati indikacije i kontraindikacije, obučeno osoblje, pažljiv monitoring-bezbednost pre svega
- Može olakšati rehabilitaciju kod hroničnog bola
- Manje rizika u odnosu na hirurgiju