

2024

## Search strategies for "Analgesic Safety and Efficacy of Peri-Operative Posterior Cervical Muscle Plane Blocks in Elective Posterior Cervical Spine Surgery: A Systematic Review with Meta-Analyses"

Luke J. Weisbrod

Omar I. Ceesay

Cynthia M. Schmidt

Daniel Surdell

Tell us how you used this information in this [short survey](#).

Follow this and additional works at: <https://digitalcommons.unmc.edu/search>

---

Title:

Analgesic Safety and Efficacy of Peri-Operative Posterior Cervical Muscle Plane Blocks in Elective Posterior Cervical Spine Surgery: A Systematic Review with Meta-Analyses

Authors:

Weisbrod LJ<sup>1</sup>, Ceesay OI<sup>2</sup>, Schmidt CM<sup>3</sup>, Surdell DL<sup>1</sup>

Affiliations:

1 Department of Neurosurgery, College of Medicine, University of Nebraska Medical Center

2 College of Medicine, University of Nebraska Medical Center

3 Leon S. McGoogan Health Sciences Library, University of Nebraska Medical Center

When possible, database filters were used to divide search results into 1) case reports and 2) other articles. Both groups were imported into the project database.

EMBASE (via Embase.com, 1974 – present version)

Outlined version of EMBASE search:

block	(
subject heading	'nerve block'/exp
OR	OR
keywords for area/target within 5 words of block*	((('erector spinae' OR fascial OR field* OR 'inter facial' OR 'inter fascial' OR 'inter semispinal' OR interfascial OR interfacial OR interfascial OR intersemispinal OR 'inter semispinal' OR intersemispinal OR 'multifidus cervicis' OR nerv* OR neur* OR plane* OR 'para spinal' OR 'para vertebral' OR paraspinal OR paravertebral OR plex* OR plane* OR radic* OR regional OR 'retro laminar' OR retrolaminar OR root* OR stellate) NEAR/5 block*):ab,kw,ti)
OR	OR
block abbreviation	cespb OR espb OR snrb
)	)
AND	AND
cervical spine	(
headings	'cervical disk degeneration'/exp/mj OR 'cervical disk prosthesis'/exp OR 'cervical spine'/exp
OR	OR
keywords	'atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico* OR cervicodorsal OR cervicothoracic OR collar* OR craniovertebral OR dens OR neck* OR occipitocervical OR odontoid
)	)
AND	AND
posterior	(

(	
posterior keywords	posterior:ab,kw,ti OR (dorsal:ab,kw,ti NOT ('dorsal root':ab,kw,ti OR 'dorsal horn':ab,kw,ti OR 'dorsal gangli*':ab,kw,ti)) OR dorso*:ab,kw,ti
)	)
AND	AND
cervical surgery	(
(	
cervical surgery headings	'cervical disk prosthesis'/exp OR 'cervical disk degeneration'/exp/dm_su OR
surgery headings AND cervical heading or keywords	((('discectomy'/exp OR 'corpectomy'/exp OR 'facetectomy'/exp OR 'intradiscal electrothermal therapy'/exp OR 'laminoplasty'/exp OR 'laminotomy'/exp OR 'pedicle subtraction osteotomy'/exp OR 'percutaneous vertebroplasty'/exp OR 'posterior spine fusion'/exp OR 'spine fusion'/de OR 'spine stabilization'/exp OR 'total disc replacement'/exp) AND ('cervical spine'/exp OR 'atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico* OR cervicodorsal OR cervicothoracic OR collar* OR craniovertebral OR dens OR neck* OR occipitocervical OR odontoid))
OR	OR
more general surgery keywords within 7 words of cervical keywords	((('approach* OR anaesth* OR anesth* OR arthroplast* OR arthroscop* OR cage* OR condens* OR decompress* OR device* OR distraction OR fixat* OR fused OR fusing OR fusion OR hardware OR implant* OR instrumentat* OR operat* OR 'peri op*' OR periop* OR pin OR pins OR 'post op*' OR postop* OR reoperat* OR revision OR rod OR rods OR screw* OR spacer* OR stabilis* OR stabiliz* OR surg*)) NEAR/7 ('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico* OR cervicodorsal OR cervicothoracic OR collar* OR craniovertebral OR dens OR occipitocervical OR odontoid)):ab,kw,ti)
OR	OR
cervical keywords within 7 words of more spine specific surgery keywords	((('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico* OR cervicodorsal OR cervicothoracic OR collar* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 (annuloplast* OR antedisplac* OR 'artificial disc*' OR 'artificial disk*' OR cadr OR discectom* OR diskectom* OR lamp OR miceps OR microdiscectom* OR microdiskectom* OR mispcf OR pcf OR pdif OR ppced OR ppecfd OR adr OR arthrodes* OR arthroplast* OR 'bagby-and-kuslich' OR 'bagby kuslich' OR 'kuslich bagby' OR bak OR cage OR cages OR corpectom* OR dbm OR 'decalcified bone matrix' OR 'demineralized bone matrix' OR decompress* OR 'disc replacement*' OR 'disk replacement*' OR foraminotom* OR fused OR fusing OR fusion OR ha OR hydroxyapatite OR hemilaminectom* OR instrumentat* OR 'inter body' OR 'inter spinous' OR 'inter verteb*' OR interbody OR interspinous OR interverteb* OR laminectom* OR 'lamino plast*' OR 'lamino tom*' OR laminoplast* OR laminotom* OR 'multi level' OR 'multi segment*' OR multisegment* OR peek OR 'poly ether ether ketone' OR rachiotom* OR rachitom* OR radiculopath* OR 'replacement disc*' OR 'replacement disk*' OR 'single level' OR spacer* OR 'spondylo synde*' OR 'spondylo tom*' OR spondylosynde* OR spondylotom* OR stabilis* OR stabiliz* OR suboccipitalhemilaminectom* OR 'trans articular' OR transarticular OR vertebrectom*)):ab,kw,ti)
OR	OR
cervical keywords within 7 words of cervical-specific or other spine words within 7 words of some	((('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico* OR cervicodorsal OR cervicothoracic OR collar* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 ('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc* OR disk* OR facet* OR 'inter body' OR 'inter spinous' OR 'inter verteb*' OR interbody OR interspinous OR interverteb* OR 'multi level*' OR 'multi segment*' OR multilevel* OR multisegment* OR pedic* OR 'single level' OR spinal OR spine* OR 'trans articular' OR transarticular OR

less surgery-specific words	vertebr*) NEAR/7 (condens* OR fixat* OR stabiliz* OR stabilis* OR excis* OR remov* OR replac* OR resect* OR subtract* OR electrotherm* OR elektrotherm*)):ab,kw,ti)
	OR
	ppced OR ppecfd OR ppecd
	)
	AND [english]/lim
	NOT ((([newborn]/lim OR [infant]/lim OR [child]/lim OR [adolescent]/lim)
	NOT ([aged]/lim AND [adult]/lim))
	NOT ([animals]/lim NOT [humans]/lim)
	NOT 'conference abstract'/it

**One line version divided into case reports and other articles:**

#2

('nerve block'/exp OR (((('erector spinae' OR fascial OR field\* OR 'inter facial' OR 'inter fascial' OR 'inter semispinal' OR interfascial OR interfascial OR interfascial OR intersemispinal OR 'inter semispinal' OR intersemispinal OR 'multifidus cervicis' OR nerv\* OR neur\* OR plane\* OR 'para spinal' OR 'para vertebral' OR paraspinal OR paravertebral OR plex\* OR plane\* OR radic\* OR regional OR 'retro laminar' OR retrolaminar OR root\* OR stellate) NEAR/5 block\*)):ab,kw,ti) OR cespb OR espb OR snrb) AND ('cervical disk degeneration'/exp/mj OR 'cervical disk prosthesis'/exp OR 'cervical spine'/exp OR 'atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid) AND (posterior:ab,kw,ti OR (dorsal:ab,kw,ti NOT ('dorsal root':ab,kw,ti OR 'dorsal horn':ab,kw,ti OR 'dorsal gangli\*':ab,kw,ti)) OR dorso\*:ab,kw,ti) AND ('cervical disk prosthesis'/exp OR 'cervical disk degeneration'/exp/dm\_su OR (('discectomy'/exp OR 'corpectomy'/exp OR 'facetectomy'/exp OR 'intradiscal electrothermal therapy'/exp OR 'laminoplasty'/exp OR 'laminotomy'/exp OR 'pedicle subtraction osteotomy'/exp OR 'percutaneous vertebroplasty'/exp OR 'posterior spine fusion'/exp OR 'spine fusion'/de OR 'spine stabilization'/exp OR 'total disc replacement'/exp) AND ('cervical spine'/exp OR 'atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid)) OR (((approach\* OR anaesth\* OR anesth\* OR arthroplast\* OR arthroscop\* OR cage\* OR condens\* OR decompress\* OR device\* OR distraction OR fixat\* OR fused OR fusing OR fusion OR hardware OR implant\* OR instrumentat\* OR operat\* OR 'peri op\*' OR periop\* OR pin OR pins OR 'post op\*' OR postop\* OR reoperat\* OR revision OR rod OR rods OR screw\* OR spacer\* OR stabilis\* OR stabiliz\* OR surg\*) NEAR/7 ('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid)):ab,kw,ti) OR (((('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 (annuloplast\* OR antedisplac\* OR 'artificial disc\*' OR 'artificial disk\*' OR cadr OR discectom\* OR diskectom\* OR lamp OR miceps OR microdiscectom\* OR microdiskectom\* OR mispcf OR pcf OR pdf OR pped OR ppecfd OR adr OR arthrodes\* OR arthroplast\* OR 'bagby-and-kuslich' OR 'bagby kuslich' OR 'kuslich bagby' OR bak OR cage OR cages OR corpectom\* OR dbm OR 'decalcified bone matrix' OR 'demineralized bone matrix' OR decompress\* OR 'disc replacement\*' OR 'disk replacement\*' OR foraminotom\* OR fused OR fusing OR fusion OR ha OR hydroxyapatite OR hemilaminectom\* OR instrumentat\* OR 'inter body' OR 'inter spinous' OR 'inter verteb\*' OR interbody OR interspinous OR interverteb\* OR laminectom\* OR 'lamino plast\*' OR 'lamino tom\*' OR laminoplast\* OR laminotom\* OR 'multi level' OR 'multi segment\*' OR multisegment\* OR peek OR 'poly ether ether ketone' OR rachiotom\* OR rachitom\* OR radiculopath\* OR 'replacement disc\*' OR 'replacement disk\*' OR 'single level' OR spacer\* OR 'spondylo synde\*' OR 'spondylo tom\*' OR spondylosynde\* OR spondylotom\* OR stabilis\* OR stabiliz\* OR suboccipitalhemilaminectom\* OR 'trans articular' OR transarticular OR vertebrectom\*)):ab,kw,ti) OR (((('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 ('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc\* OR disk\* OR facet\* OR 'inter body' OR 'inter spinous' OR 'inter verteb\*' OR interbody OR interspinous OR interverteb\* OR 'multi level\*' OR 'multi segment\*' OR multilevel\* OR multisegment\* OR pedic\* OR 'single level' OR spinal OR spine\* OR 'trans articular' OR transarticular OR vertebr\*) NEAR/7

(condens\* OR fixat\* OR stabiliz\* OR stablis\* OR excis\* OR remov\* OR replac\* OR resect\* OR subtract\* OR electrotherm\* OR elektrotherm\*):ab,kw,ti) OR ppced OR ppecfd OR ppecd) AND [english]/lim NOT ([newborn]/lim OR [infant]/lim OR [child]/lim OR [adolescent]/lim) NOT ([aged]/lim AND [adult]/lim)) NOT ([animals]/lim NOT [humans]/lim) NOT 'conference abstract'/it NOT ('case report'/de OR 'case study'/de)

#1

('nerve block'/exp OR (((('erector spinae' OR fascial OR field\* OR 'inter facial' OR 'inter fascial' OR 'inter semispinal' OR interfascial OR interfascial OR interfascial OR intersemispinal OR 'inter semispinal' OR intersemispinal OR 'multifidus cervicis' OR nerv\* OR neur\* OR plane\* OR 'para spinal' OR 'para vertebral' OR paraspinal OR paravertebral OR plex\* OR plane\* OR radic\* OR regional OR 'retro laminar' OR retrolaminar OR root\* OR stellate) NEAR/5 block\*):ab,kw,ti) OR cespb OR espb OR snrb) AND ('cervical disk degeneration'/exp/mj OR 'cervical disk prosthesis'/exp OR 'cervical spine'/exp OR 'atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid) AND (posterior:ab,kw,ti OR (dorsal:ab,kw,ti NOT ('dorsal root':ab,kw,ti OR 'dorsal horn':ab,kw,ti OR 'dorsal gangli\*':ab,kw,ti)) OR dorso\*:ab,kw,ti) AND ('cervical disk prosthesis'/exp OR 'cervical disk degeneration'/exp/dm\_su OR (('discectomy'/exp OR 'corpectomy'/exp OR 'facetectomy'/exp OR 'intradiscal electrothermal therapy'/exp OR 'laminoplasty'/exp OR 'laminotomy'/exp OR 'pedicle subtraction osteotomy'/exp OR 'percutaneous vertebroplasty'/exp OR 'posterior spine fusion'/exp OR 'spine fusion'/de OR 'spine stabilization'/exp OR 'total disc replacement'/exp) AND ('cervical spine'/exp OR 'atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid)) OR (((approach\* OR anaesth\* OR anesth\* OR arthroplast\* OR arthroscop\* OR cage\* OR condens\* OR decompress\* OR device\* OR distraction OR fixat\* OR fused OR fusing OR fusion OR hardware OR implant\* OR instrumentat\* OR operat\* OR 'peri op\*' OR periop\* OR pin OR pins OR 'post op\*' OR postop\* OR reoperat\* OR revision OR rod OR rods OR screw\* OR spacer\* OR stabilis\* OR stabiliz\* OR surg\*) NEAR/7 ('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid)):ab,kw,ti) OR (((('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 (annuloplast\* OR antedisplac\* OR 'artificial disc\*' OR 'artificial disk\*' OR cadr OR discectom\* OR diskectom\* OR lamp OR miceps OR microdiscectom\* OR microdiskectom\* OR mispcf OR pcf OR pdif OR ppced OR ppecfd OR adr OR arthrodes\* OR arthroplast\* OR 'bagby-and-kuslich' OR 'bagby kuslich' OR 'kuslich bagby' OR bak OR cage OR cages OR corpectom\* OR dbm OR 'decalcified bone matrix' OR 'demineralized bone matrix' OR decompress\* OR 'disc replacement\*' OR 'disk replacement\*' OR foraminotom\* OR fused OR fusing OR fusion OR ha OR hydroxyapatite OR hemilaminectom\* OR instrumentat\* OR 'inter body' OR 'inter spinous' OR 'inter verteb\*' OR interbody OR interspinous OR interverteb\* OR laminectom\* OR 'lamino plast\*' OR 'lamino tom\*' OR laminoplast\* OR laminotom\* OR 'multi level' OR 'multi segment\*' OR multisegment\* OR peek OR 'poly ether ether ketone' OR rachiotom\* OR rachitom\* OR radiculopath\* OR 'replacement disc\*' OR 'replacement disk\*' OR 'single level' OR spacer\* OR 'spondylo synde\*' OR 'spondylo tom\*' OR spondylosynde\* OR spondylotom\* OR stabilis\* OR stabiliz\* OR suboccipitalhemilaminectom\* OR 'trans articular' OR transarticular OR vertebractom\*)):ab,kw,ti) OR (((('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 ('atlanto occipital' OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc\* OR disk\* OR facet\* OR 'inter body' OR 'inter spinous' OR 'inter verteb\*' OR interbody OR interspinous OR interverteb\* OR 'multi level\*' OR 'multi segment\*' OR multilevel\* OR multisegment\* OR pedic\* OR 'single level' OR spinal OR spine\* OR 'trans articular' OR transarticular OR vertebr\*) NEAR/7 (condens\* OR fixat\* OR stabiliz\* OR stablis\* OR excis\* OR remov\* OR replac\* OR resect\* OR subtract\* OR electrotherm\* OR elektrotherm\*):ab,kw,ti) OR ppced OR ppecfd OR ppecd) AND [english]/lim NOT ([newborn]/lim OR [infant]/lim OR [child]/lim OR [adolescent]/lim) NOT ([aged]/lim AND [adult]/lim)) NOT ([animals]/lim NOT [humans]/lim) NOT 'conference abstract'/it AND ('case report'/de OR 'case study'/de)

.....  
**MEDLINE via EBSCOhost**

**Outlined version of MEDLINE search:**

( MH "nerve block+" OR (( "erector spinae" OR fascial OR field\* OR inter-facial OR inter-fascial OR inter-semispinal OR interfascial OR interfacial OR interfascial OR intersemispinal OR inter-semispinal OR intersemispinal OR multifidus-cervicis OR nerv\* OR neur\* OR plane\* OR para-spinal OR para-vertebral OR paraspinal OR paravertebral OR plex\* OR plane\* OR radic\* OR regional OR retro-laminar OR retrolaminar OR root\* OR stellate) N4 block\*) OR CESPB OR ESPB OR SNRB )

AND

( MH "Cervical Vertebrae+" OR "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid)

AND

(posterior OR (dorsal NOT ("dorsal root" OR "dorsal horn" OR "dorsal gangl\*)) OR dorso\*)

AND

(

(( MH "Cervical Vertebrae+" OR "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid ) AND ( MH "Total Disc Replacement" OR MH "Discectomy+" OR MH "Laminectomy" OR MH "Laminoplasty" OR MH "Intervertebral Disc Chemolysis" OR MH "Vertebroplasty+" OR MH "Intervertebral Disc Degeneration/SU" OR MH "Vertebral Body/SU" ) ) OR

((approach\* OR anaesth\* OR anesth\* OR arthroplast\* OR arthroscop\* OR cage\* OR condens\* OR decompress\* OR device\* OR distraction OR fixat\* OR fused OR fusing OR fusion OR hardware OR implant\* OR instrumentat\* OR operat\* OR peri-op\* OR periop\* OR pin OR pins OR post-op\* OR postop\* OR reoperat\* OR revision OR rod OR rods OR screw\* OR spacer\* OR stabilis\* OR stabiliz\* OR surg\* ) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid))

OR

( (annuloplast\* OR antedisplac\* OR "artificial disc\*" OR "artificial disk\*" OR CADR OR discectom\* OR discectom\* OR LAMP OR MICEPS OR microdiscectom\* OR microdiscectom\* OR MISPCF OR PCF OR pdif OR ppced OR ppecfd OR adr OR arthrodes\* OR arthroplast\* OR "Bagby-and-Kuslich" OR bagby-kuslich OR kuslich-bagby OR BAK OR cage OR cages OR corpectom\* OR DBM OR "decalcified bone matrix" OR "demineralized bone matrix" OR decompress\* OR "disc replacement\*" OR "disk replacement\*" OR foraminotom\* OR fused OR fusing OR fusion OR HA OR hydroxyapatite OR hemilaminectom\* OR instrumentat\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR laminectom\* OR lamino-plast\* OR lamino-tom\* OR laminoplast\* OR laminotom\* OR multi-level OR multi-segment\* OR multisegment\* OR PEEK OR Poly-ether-ether-ketone OR rachiotom\* OR rachitom\* OR radiculopath\* OR "replacement disc\*" OR "replacement disk\*" OR single-level OR spacer\* OR spondylo-synde\* OR spondylo-tom\* OR spondylosynde\* OR spondylotom\* OR stabilis\* OR stabiliz\* OR suboccipitalhemilaminectom\* OR trans-articular OR transarticular OR vertebrectom\*) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid))

OR

(("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc\* OR disk\* OR facet\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR multi-level\* OR multi-segment\* OR multilevel\* OR multisegment\* OR pedic\* OR single-level OR spinal OR spine\* OR trans-articular OR transarticular OR vertebr\* ) N6 (condens\* OR fixat\* OR stabiliz\* OR stabilis\* OR excis\* OR remov\* OR replac\* OR resect\* OR subtract\* OR electrotherm\* OR elektrotherm\*))

OR

ppced OR ppecfd OR PPECD

)

AND (LA "English")

NOT ((MH "Adolescent+" OR MH "Child+" OR MH "Infant+") NOT MH "Adult+")  
NOT (MH "Animals+" NOT MH "Humans+")

**One line version divided into case reports and other articles:**

S2

( ( MH "nerve block+" OR ( ( "erector spinae" OR fascial OR field\* OR inter-facial OR inter-fascial OR inter-semispinal OR interfascial OR interfacial OR interfascial OR intersemispinal OR inter-semispinal OR intersemispinal OR multifidus-cervicis OR nerv\* OR neur\* OR plane\* OR para-spinal OR para-vertebral OR paraspinal OR paravertebral OR plex\* OR plane\* OR radic\* OR regional OR retro-laminar OR retrolaminar OR root\* OR stellate) N4 block\*) OR CESPb OR ESPb OR SNRB ) ) AND ( ( MH "Cervical Vertebrae+" OR "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid ) ) AND ( (posterior OR (dorsal NOT ("dorsal root" OR "dorsal horn" OR "dorsal gangl\*")) OR dorso\* ) ) AND ( ( ( MH "Cervical Vertebrae+" OR "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid ) AND ( MH "Total Disc Replacement" OR MH "Discectomy+" OR MH "Laminectomy" OR MH "Laminoplasty" OR MH "Intervertebral Disc Chemolysis" OR MH "Vertebroplasty+" OR MH "Intervertebral Disc Degeneration/SU" OR MH "Vertebral Body/SU" ) ) OR ((approach\* OR anaesth\* OR anesth\* OR arthroplast\* OR arthroscop\* OR cage\* OR condens\* OR decompress\* OR device\* OR distraction OR fixat\* OR fused OR fusing OR fusion OR hardware OR implant\* OR instrumentat\* OR operat\* OR peri-op\* OR periop\* OR pin OR pins OR post-op\* OR postop\* OR reoperat\* OR revision OR rod OR rods OR screw\* OR spacer\* OR stabilis\* OR stabiliz\* OR surg\* ) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid)) OR ( (annuloplast\* OR antedisplac\* OR "artificial disc\*" OR "artificial disk\*" OR CADR OR discectom\* OR discectom\* OR LAMP OR MICEPS OR microdiscectom\* OR microdiscectom\* OR MISPCF OR PCF OR pdif OR ppced OR ppecfd OR adr OR arthrodes\* OR arthroplast\* OR "Bagby-and-Kuslich" OR bagby-kuslich OR kuslich-bagby OR BAK OR cage OR cages OR corpectom\* OR DBM OR "decalcified bone matrix" OR "demineralized bone matrix" OR decompress\* OR "disc replacement\*" OR "disk replacement\*" OR foraminotom\* OR fused OR fusing OR fusion OR HA OR hydroxyapatite OR hemilaminectom\* OR instrumentat\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR laminectom\* OR lamino-plast\* OR lamino-tom\* OR laminoplast\* OR laminotom\* OR multi-level OR multi-segment\* OR multisegment\* OR PEEK OR Poly-ether-ether-ketone OR rachiotom\* OR rachiotom\* OR radiculopath\* OR "replacement disc\*" OR "replacement disk\*" OR single-level OR spacer\* OR spondylo-synd\* OR spondylo-tom\* OR spondylosynd\* OR spondylotom\* OR stabilis\* OR stabiliz\* OR suboccipitalhemilaminectom\* OR trans-articular OR transarticular OR vertebrectom\*) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid)) OR ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc\* OR disk\* OR facet\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR multi-level\* OR multi-segment\* OR multilevel\* OR multisegment\* OR pedic\* OR single-level OR spinal OR spine\* OR trans-articular OR transarticular OR vertebra\* ) N6 (condens\* OR fixat\* OR stabiliz\* OR stabilis\* OR excis\* OR remov\* OR replac\* OR resect\* OR subtract\* OR electrotherm\* OR elektrotherm\*)) OR ppced OR ppecfd OR PPECD ) ) AND (LA "English") NOT ( ((MH "Adolescent+" OR MH "Child+" OR MH "Infant+") NOT MH "Adult+" ) ) NOT VI ( (MH "Animals+" NOT MH "Humans+" ) ) AND ( PT "case reports" )

Search modes - Boolean/Phrase

Interface - EBSCOhost Research Databases

Search Screen - Advanced Search

Database - MEDLINE

S1

( ( MH "nerve block+" OR ( ( "erector spinae" OR fascial OR field\* OR inter-facial OR inter-fascial OR inter-semispinal OR interfascial OR interfascial OR interfascial OR intersemispinal OR inter-semispinal OR intersemispinal OR multifidus-cervicis OR nerv\* OR neur\* OR plane\* OR para-spinal OR para-vertebral OR paraspinal OR paravertebral OR plex\* OR plane\* OR radic\* OR regional OR retro-laminar OR retrolaminar OR root\* OR stellate) N4 block\*) OR CESPB OR ESPB OR SNRB ) ) AND ( ( MH "Cervical Vertebrae+" OR "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid ) ) AND ( ( posterior OR (dorsal NOT ("dorsal root" OR "dorsal horn" OR "dorsal gangl\*")) OR dorso\* ) ) AND ( ( ( MH "Cervical Vertebrae+" OR "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid ) ) AND ( MH "Total Disc Replacement" OR MH "Discectomy+" OR MH "Laminectomy" OR MH "Laminoplasty" OR MH "Intervertebral Disc Chemolysis" OR MH "Vertebroplasty+" OR MH "Intervertebral Disc Degeneration/SU" OR MH "Vertebral Body/SU" ) ) OR ((approach\* OR anaesth\* OR anesth\* OR arthroplast\* OR arthroscop\* OR cage\* OR condens\* OR decompress\* OR device\* OR distraction OR fixat\* OR fused OR fusing OR fusion OR hardware OR implant\* OR instrumentat\* OR operat\* OR peri-op\* OR periop\* OR pin OR pins OR post-op\* OR postop\* OR reoperat\* OR revision OR rod OR rods OR screw\* OR spacer\* OR stabilis\* OR stabiliz\* OR surg\* ) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid)) OR ( (annuloplast\* OR antedisplac\* OR "artificial disc\*" OR "artificial disk\*" OR CADR OR discectom\* OR discectom\* OR LAMP OR MICEPS OR microdiscectom\* OR microdiscectom\* OR MISPCF OR PCF OR pdif OR ppced OR ppecfd OR adr OR arthrodes\* OR arthroplast\* OR "Bagby-and-Kuslich" OR bagby-kuslich OR kuslich-bagby OR BAK OR cage OR cages OR corpectom\* OR DBM OR "decalcified bone matrix" OR "demineralized bone matrix" OR decompress\* OR "disc replacement\*" OR "disk replacement\*" OR foraminotom\* OR fused OR fusing OR fusion OR HA OR hydroxyapatite OR hemilaminectom\* OR instrumentat\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR laminectom\* OR lamino-plast\* OR lamino-tom\* OR laminoplast\* OR laminotom\* OR multi-level OR multi-segment\* OR multisegment\* OR PEEK OR Poly-ether-ether-ketone OR rachiotom\* OR rachiotom\* OR radiculopath\* OR "replacement disc\*" OR "replacement disk\*" OR single-level OR spacer\* OR spondylo-synde\* OR spondylo-tom\* OR spondylosynde\* OR spondylotom\* OR stabilis\* OR stabiliz\* OR suboccipitalhemilaminectom\* OR trans-articular OR transarticular OR vertebrectom\*) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid)) OR ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) N6 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc\* OR disk\* OR facet\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR multi-level\* OR multi-segment\* OR multilevel\* OR multisegment\* OR pedic\* OR single-level OR spinal OR spine\* OR trans-articular OR transarticular OR verteb\*) N6 (condens\* OR fixat\* OR stabiliz\* OR stabilis\* OR excis\* OR remov\* OR replac\* OR resect\* OR subtract\* OR electrotherm\* OR elektrotherm\*)) OR ppced OR ppecfd OR PPECDD ) ) AND (LA "English") NOT ( ((MH "Adolescent+" OR MH "Child+" OR MH "Infant+") NOT MH "Adult+") ) NOT VI ( (MH "Animals+" NOT MH "Humans+") ) NOT ( PT "case reports" ) )

Search modes - Boolean/Phrase

Interface - EBSCOhost Research Databases

Search Screen - Advanced Search

Database - MEDLINE

.....

**Cochrane Library (via Wiley)**

ID Search Hits

#1 MeSH descriptor: [Nerve Block] explode all trees

#2 ((( "erector spinae" OR fascial OR field\* OR "inter facial" OR "inter fascial" OR "inter semispinal" OR interfascial OR interfascial OR interfascial OR intersemispinal OR "inter semispinal" OR intersemispinal OR



"multifidus cervicis" OR nerv\* OR neur\* OR plane\* OR "para spinal" OR "para vertebral" OR paraspinal OR paravertebral OR plex\* OR plane\* OR radic\* OR regional OR "retro laminar" OR retrolaminar OR root\* OR stellate) NEAR/5 block\*):ab,kw,ti) OR cespb OR espb OR snrb

#3 #1 OR #2

#4 MeSH descriptor: [Cervical Vertebrae] explode all trees

#5 "atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR neck\* OR occipitocervical OR odontoid

#6 (#4 OR #5)

#7 ((approach\* OR anaesth\* OR anesth\* OR arthroplast\* OR arthroscop\* OR cage\* OR condens\* OR decompress\* OR device\* OR distraction OR fixat\* OR fused OR fusing OR fusion OR hardware OR implant\* OR instrumentat\* OR operat\* OR peri-op\* OR periop\* OR pin OR pins OR post-op\* OR postop\* OR reoperat\* OR revision OR rod OR rods OR screw\* OR spacer\* OR stabilis\* OR stabiliz\* OR surg\* ) NEAR/7 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid))

#8 ( (annuloplast\* OR antedisplac\* OR "artificial disc" OR "artificial disk" OR "artificial discs" OR "artificial disks" OR CADR OR discectom\* OR diskectom\* OR LAMP OR MICEPS OR microdiscectom\* OR microdiskectom\* OR MISPCF OR PCF OR pdfif OR ppced OR ppecfd OR adr OR arthrodes\* OR arthroplast\* OR "Bagby-and-Kuslich" OR bagby-kuslich OR kuslich-bagby OR BAK OR cage OR cages OR corpectom\* OR DBM OR "decalcified bone matrix" OR "demineralized bone matrix" OR decompress\* OR "disc replacement" OR "disk replacement" OR "disc replacements" OR "disk replacements" OR foraminotom\* OR fused OR fusing OR fusion OR HA OR hydroxyapatite OR hemilaminectom\* OR instrumentat\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR laminectom\* OR lamino-plast\* OR lamino-tom\* OR laminoplast\* OR laminotom\* OR multi-level OR multi-segment\* OR multisegment\* OR PEEK OR Poly-ether-ether-ketone OR rachiotom\* OR rachitom\* OR radiculopath\* OR "replacement disc" OR "replacement disk" OR "replacement discs" OR "replacement disks" OR single-level OR spacer\* OR spondylo-synde\* OR spondylo-tom\* OR spondylosynde\* OR spondylotom\* OR stabilis\* OR stabiliz\* OR suboccipitalhemilaminectom\* OR trans-articular OR transarticular OR vertebrectom\*) NEAR/7 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid))

#9 (("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR cervical OR cervico\* OR cervicodorsal OR cervicothoracic OR collar\* OR craniovertebral OR dens OR occipitocervical OR odontoid) NEAR/7 ("atlanto occipital" OR atlas OR axis OR c1 OR c2 OR c3 OR c4 OR c5 OR c6 OR c7 OR dens OR odontoid OR disc\* OR disk\* OR facet\* OR inter-body OR inter-spinous OR inter-verteb\* OR interbody OR interspinous OR interverteb\* OR multi-level\* OR multi-segment\* OR multilevel\* OR multisegment\* OR pedic\* OR single-level OR spinal OR spine\* OR trans-articular OR transarticular OR vertebr\* ) NEAR/7 (condens\* OR fixat\* OR stabiliz\* OR stablis\* OR excis\* OR remov\* OR replac\* OR resect\* OR subtract\* OR electrotherm\* OR elektrotherm\*) )

#10 ppced OR ppecfd OR PPECD

#11 MeSH descriptor: [Total Disc Replacement] explode all trees

#12 MeSH descriptor: [Intervertebral Disc Degeneration] explode all trees and with qualifier(s): [surgery - SU]

#13 MeSH descriptor: [Diskectomy] explode all trees

#14 MeSH descriptor: [Intervertebral Disc Chemolysis] explode all trees

#15 MeSH descriptor: [Laminectomy] explode all trees

#16 MeSH descriptor: [Laminoplasty] explode all trees

#17 MeSH descriptor: [Vertebral Body] explode all trees and with qualifier(s): [surgery - SU]

#18 MeSH descriptor: [Vertebroplasty] explode all trees

#19 MeSH descriptor: [Intervertebral Disc Degeneration] explode all trees and with qualifier(s): [surgery - SU]

#20 "publication type" NEAR/3 "trial registry"

#21 ((newborn\* OR neonat\* OR infan\* OR child\* OR adolescen\*) NOT (adult\* OR elder\* OR aged)):kw

#22 (posterior OR (dorsal NOT ("dorsal root" OR "dorsal horn" OR "dorsal ganglion" OR "dorsal ganglia"))) OR dorso\*):ab,kw,ti

#23 (#3 AND #6 AND (((#11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19) AND #4) OR #7 OR #8 OR #9 OR #10) AND #22) NOT (#20 OR #21)