



Webinar SINch Spinale 2025

Approfondimenti di chirurgia vertebra-midollare – dalla diagnosi al trattamento

2 Luglio 2025

Ore 17:30 – 18:30

Titolo: *Cefalea spinale: la sindrome da ipotensione liquorale da fistola spinale spontanea*

Responsabile scientifico: Dr.ssa Ilaria Melloni

SC Neurochirurgia, Policlinico San Martino, Genova

Programma

17:30 – 17:35

Introduzione e presentazione dei relatori

I. Melloni, Neurochirurgo IRCCS Policlinico San Martino Genova

17:35 – 17:50

Epidemiologia, clinica e diagnostica della sindrome da ipotensione liquorale

K. Wolf, Neurologa Universitätsklinikum Freiburg

17:50 – 18.05

Trattamento dei vari tipi di ipotensione liquorale

A. El Rahal, Neurochirurgo Universitätsklinikum Freiburg

18.05 – 18.15

Controversie sulla diagnosi e sulla gestione clinica: discussione con tutti

I. Melloni, IRCCS Policlinico San Martino Genova

18.15 – 18.25

Controversie sull'iter terapeutico: discussione con tutti

A. Balestrino, Neurochirurgo IRCCS Policlinico San Martino Genova

18.25 – 18.30

Conclusione

18:30 – 19.00

Riunione Sezione Spinale SINch

«Cefalea spinale»: la sindrome da ipotensione liquorale spontanea

- Patologia sottodiagnosticata, ma non rara
- Può causare una morbidità significativa e disabilità a lungo termine
- Incidenza: circa 5 casi ogni 100.000 abitanti
- Predominanza femminile (rapporto donne:uomini 2:1)

«Cefalea spinale»: sintomi e segni

Il sintomo cardine è la **cefalea ortostatica**

Altri sintomi comuni:

- Nausea
- Vomito
- Fotofobia
- Acufeni
- Disturbi visive

La diagnosi può essere **ritardata di mesi o anni**

«Cefalea spinale»: sintomi e segni

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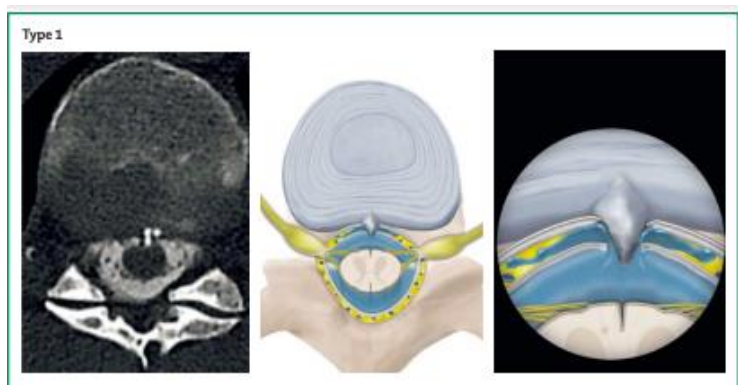
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Clinical clues	
Traumatic CSF leak	History of lumbar puncture, peridural anaesthesia, or spinal or cranial surgery
Postural tachycardia syndrome	Excessive heart rate acceleration and symptoms of cerebral hypoperfusion (not merely headache) on standing
Migraine	Headache improves with supine position but does not go away within minutes
Benign exertional headache	Precipitated by exertion
Intracranial neoplasm, including colloid cysts	Could block CSF flow in the brain resulting in a major change in CSF pressure when upright
Cerebral venous thrombosis	Thromboembolic risk factors, magnetic resonance venography and increased D-dimer
Cervicogenic headache	Worse with upright posture and head movement
Headache due to sinusitis	Anterior in particular, worsening on valsalva manoeuvre and bending forward, can be exacerbated by other changes in position
Idiopathic intracranial hypertension	Female predominance, overweight, visual field defects

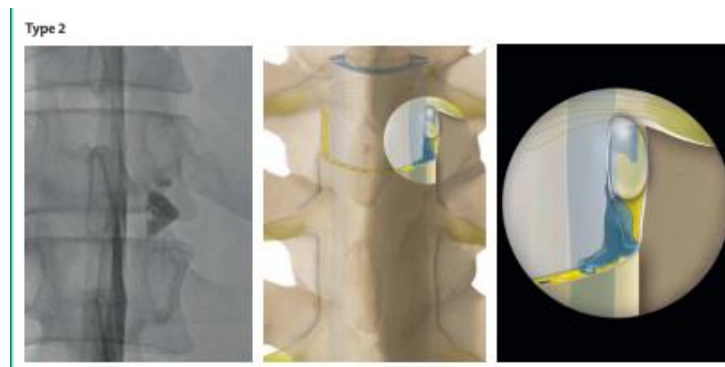
Table: Differential diagnoses for patients presenting with orthostatic headache

Dobrocky T, Nicholson P, Häni L, Mordasini P, Krings T, Brinjikji W, Cutsforth-Gregory JK, Schär R, Schankin C, Gralla J, Pereira VM, Raabe A, Farb R, Beck J, Piechowiak EI. Spontaneous intracranial hypotension: searching for the CSF leak. Lancet Neurol. 2022 Apr;21(4):369-380.

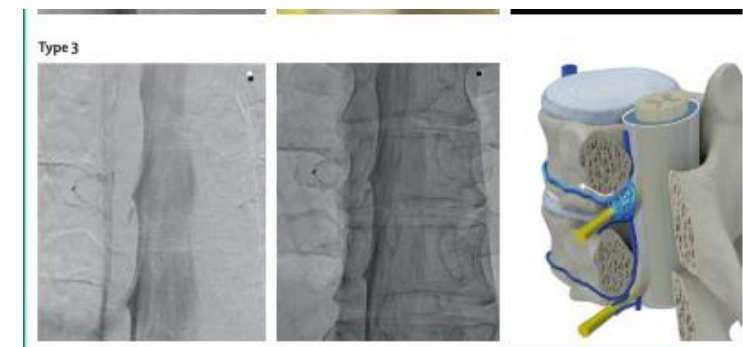
«Cefalea spinale»: eziologia



Tipo 1: Rottura anteriore della dura madre causata da osteofiti



Tipo 2: Perdita da un diverticolo aracnoideo laterale in corrispondenza della radice nervosa



Tipo 3: Fistola diretta liquor-venosa

Dobrocky T, Nicholson P, Häni L, Mordasini P, Krings T, Brinjikji W, Cutsforth-Gregory JK, Schär R, Schankin C, Gralla J, Pereira VM, Raabe A, Farb R, Beck J, Piechowiak EI. Spontaneous intracranial hypotension: searching for the CSF leak. Lancet Neurol. 2022 Apr;21(4):369-380. doi: 10.1016/S1474-4422(21)00423-3. Epub 2022 Feb 25. PMID: 35227413.

«Cefalea spinale»: complicanze

➤ **Ematomi sottodurali** (spesso bilaterali)

80% dei pazienti con ematomi sottodurali cronici sotto i 60 anni ha una sindrome da ipotensione liquorale sottostante

➤ **Siderosi superficiale**

Depositi di emosiderina sulla superficie cerebrale e midollare, associati a perdite croniche di CSF

➤ **"Brain sagging dementia"**

Quadro clinico simile a una demenza degenerativa

- Beck J, Gralla J, Fung C, Ulrich CT, Schucht P, Fichtner J, et al. Spinal cerebrospinal fluid leak as the cause of chronic subdural hematomas in young patients: diagnosis and treatment. *J Neurosurg*. 2014;121(6):1380-7.
- Kumar N. Neuroimaging in superficial siderosis: an in-depth look. *AJNR Am J Neuroradiol*. 2010;31(1):5-14.
- Wicklund MR, Mokri B, Drubach DA, Parisi JE, Josephs KA. "Brain sagging" dementia: an underrecognized syndrome? *Neurology*. 2011;76(21):1951-5.

«Cefalea spinale»: imaging

RM cerebrale

- T1 Gad
- FLAIR
- SWI
- T2 FAT SAT

Imaging Features

Brain MRI normal in 20%

CRANIAL SIGNS

S

SUBDURAL FLUID COLLECTIONS
(hygromas, hematomas)

E

ENHANCEMENT OF THE
PACHYMENINGES (diffuse, smooth, uniform)

E

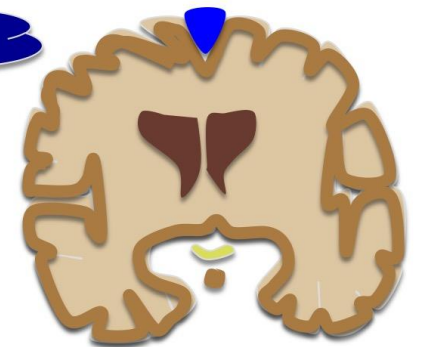
ENGORGEMENT OF VENOUS STRUCTURES

P

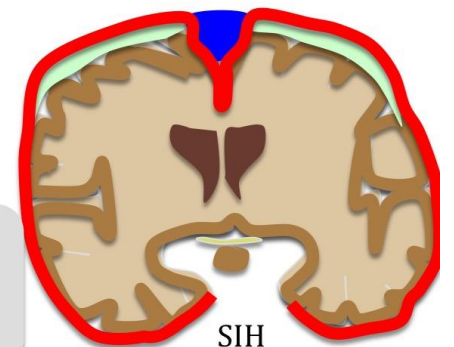
PITUITARY HYPEREMIA

S

SAGGING OF THE BRAIN (flattening of pons, effacement of basal cisterns, bowing of optic chiasm, descent of cerebellar tonsils)



NORMAL CONDITIONS



SIH

«Cefalea spinale»: imaging

RM cerebrale

- T1 Gad
- FLAIR
- SWI
- T2 FAT SAT

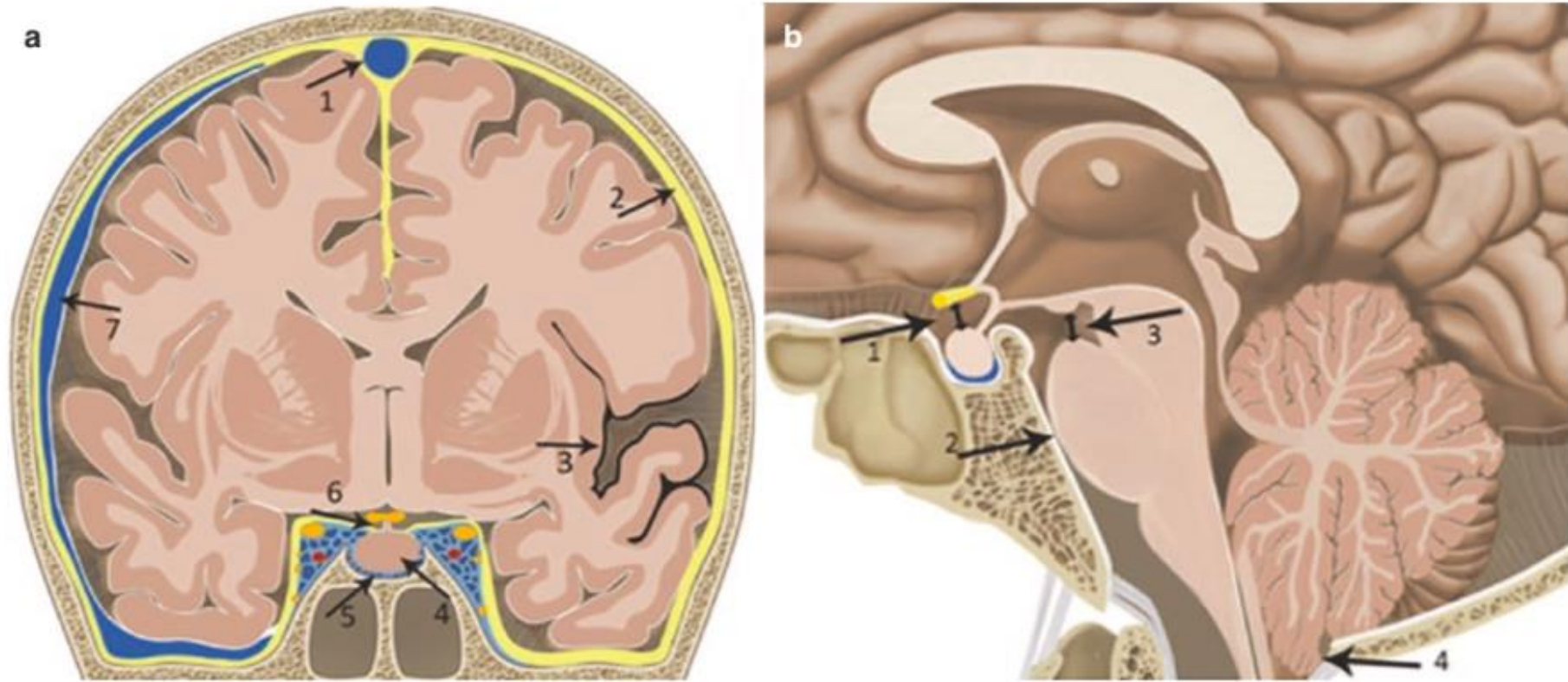


Fig. 2.1 (a) Coronal illustration of the brain with typical findings in a patient with a spinal CSF leak with venous distention of the superior sagittal sinus (arrowhead 1), pachymeningeal enhancement (arrowhead 2), superficial siderosis (arrowhead 3), enlarged pituitary (arrowhead 4), prominent intercavernous sinus (arrowhead 5), effaced suprasellar cistern (arrowhead 6), and subdural fluid collection (arrowhead 7). (b)

Sagittal illustration of the posterior fossa with typical findings in patients with a CSF leak with effaced suprasellar cistern (arrowhead 1; pathologic ≤ 4 mm), effacement of the prepontine cistern (2; pathologic ≤ 5 mm), decreased mamillopontine distance (3; pathologic ≤ 6.5 mm), and low-lying cerebellar tonsils (arrowhead 4). (Reprinted from Dobrocky et al., JAMA 2019)

«Cefalea spinale»: imaging

RM cerebrale

- T1 Gad
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Table 1 SIH signs on MRI of the head: “Bern” score (18)

Major criteria	
Engorgement of venous sinuses	2
Pachymeningeal enhancement	2
Suprasellar cistern ≤ 4 mm	2
Minor criteria	
Subdural fluid collection	1
Prepontine cistern ≤ 5 mm	1
Mamillopontine distance ≤ 6.5 mm	1
Sum	9

Low risk ≤ 2 points

Intermediate risk 3–4 points

High risk ≥ 5 points

«Cefalea spinale»: imaging

RM del rachide

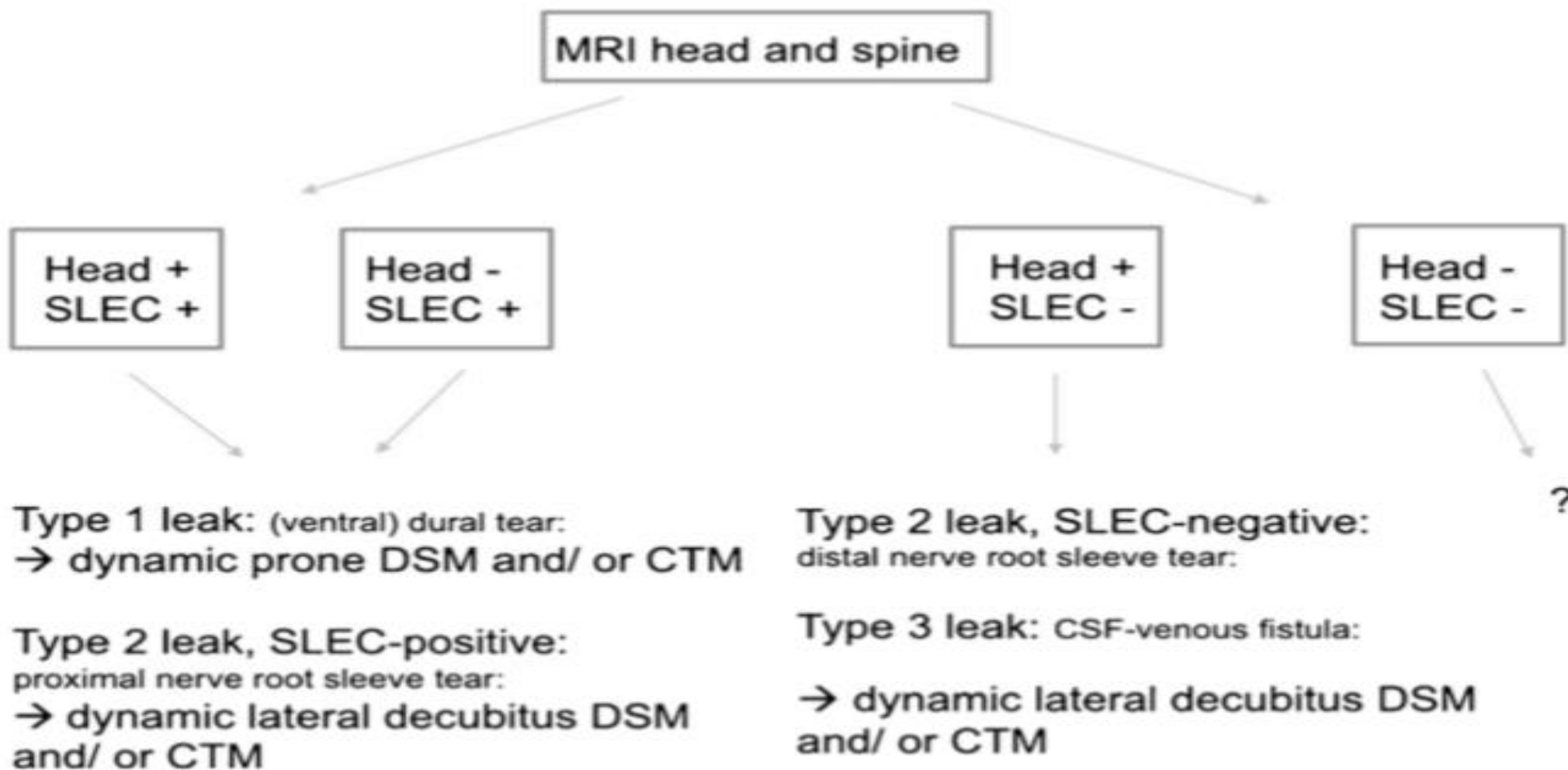
SLEC
Spinal
Longitudinal
Epidural
Collections

SLEC in type 1 and 2



Dobrocky T, Nicholson P, Häni L, Mordasini P, Krings T, Brinjikji W, Cutsforth-Gregory JK, Schär R, Schankin C, Gralla J, Pereira VM, Raabe A, Farb R, Beck J, Piechowiak EI. Spontaneous intracranial hypotension: searching for the CSF leak. *Lancet Neurol.* 2022 Apr;21(4):369-380. doi: 10.1016/S1474-4422(21)00423-3. Epub 2022 Feb 25. PMID: 35227413.

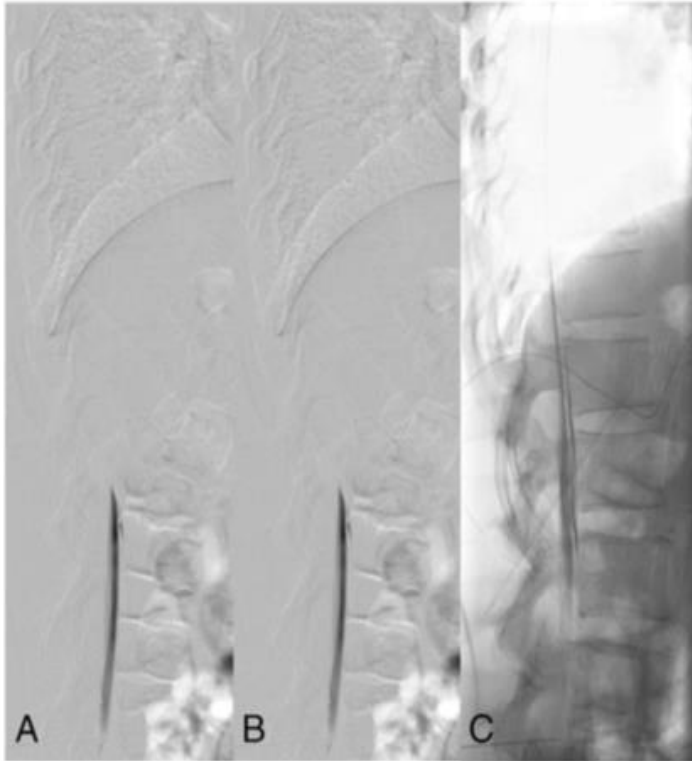
«Cefalea spinale»: imaging



«Cefalea spinale»: imaging

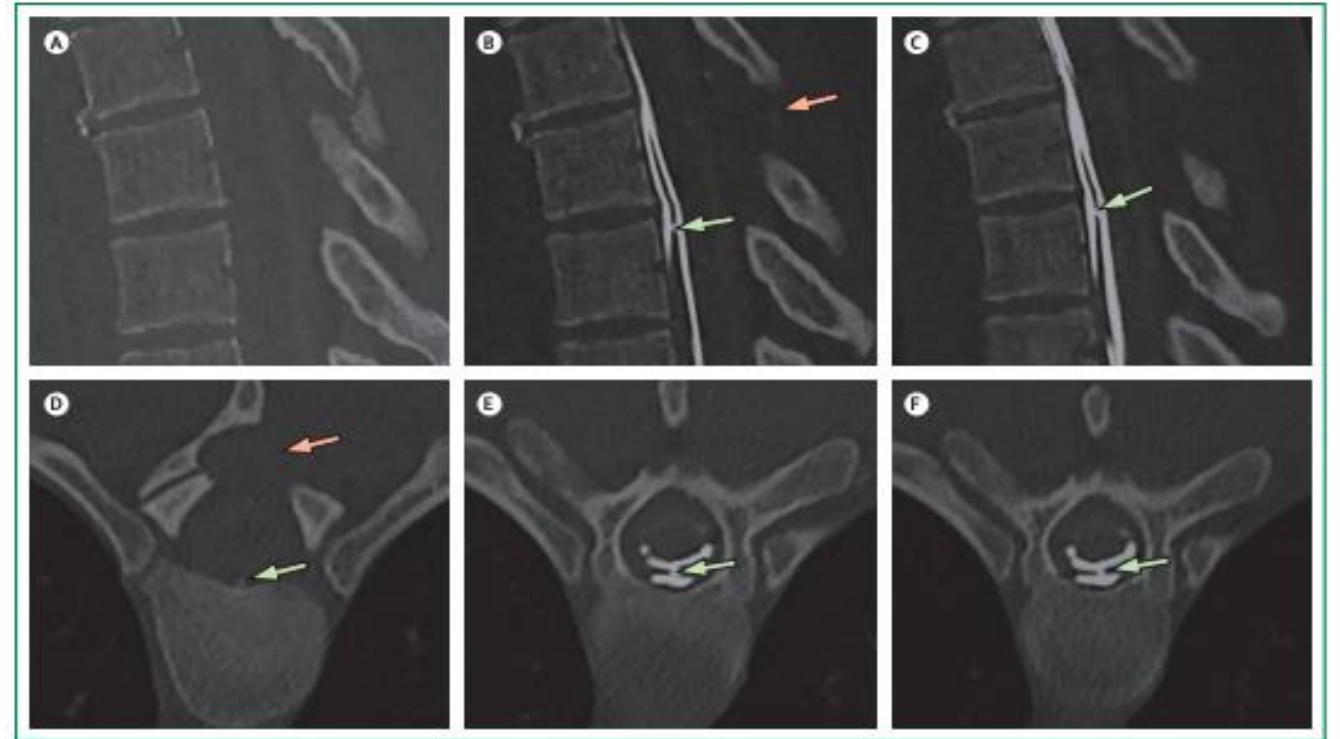
Tipo I

Myelography



Luetzen N, Davi-Akue P, Fung C, Beck J, Urbach H. Spontaneous intracranial hypotension: diagnostic and therapeutic workup. *Neuroradiology*. 2021 Nov;63(11):1765-1772.

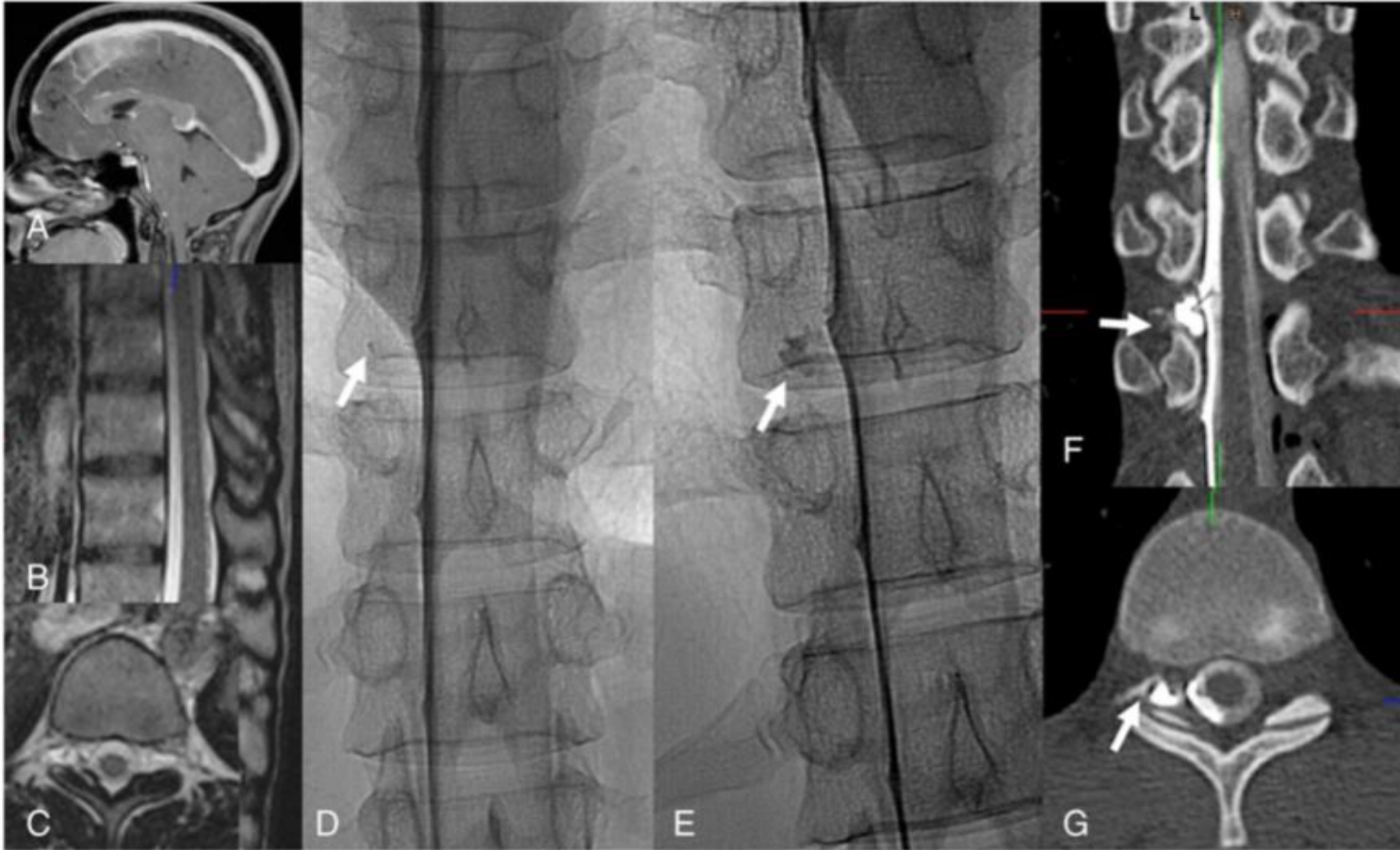
Dynamic Myelo-CT



Dobrocky T, Nicholson P, Häni L, Mordasini P, Krings T, Brinjikji W, Cutsforth-Gregory JK, Schär R, Schankin C, Gralla J, Pereira VM, Raabe A, Farb R, Beck J, Piechowiak EI. Spontaneous intracranial hypotension: searching for the CSF leak. *Lancet Neurol*. 2022 Apr;21(4):369-380. doi: 10.1016/S1474-4422(21)00423-3. Epub 2022 Feb 25. PMID: 35227413.

«Cefalea spinale»: imaging

Tipo II



Luetzen N, Dovi-Akue P, Fung C, Beck J, Urbach H. Spontaneous intracranial hypotension: diagnostic and therapeutic workup. *Neuroradiology*. 2021 Nov;63(11):1765-1772. doi: 10.1007/s00234-021-02766-z. Epub 2021 Jul 23. PMID: 34297176; PMCID: PMC8528761.

«Cefalea spinale»: imaging

Tipo III



Luetzen N, Dovi-Akue P, Fung C, Beck J, Urbach H. Spontaneous intracranial hypotension: diagnostic and therapeutic workup. *Neuroradiology*. 2021 Nov;63(11):1765-1772. doi: 10.1007/s00234-021-02766-z. Epub 2021 Jul 23. PMID: 34297176; PMCID: PMC8528761.

«Cefalea spinale»: linee guida

Linee guida di consenso 2023

Si raccomanda di eseguire **almeno 2 blood patch epidurali “non mirati”** prima di ricorrere a indagini diagnostiche invasive

Validità della raccomandazione dibattuta

L'efficacia del **blood patch epidurale (EBP)**:

- Sollievo sintomatico nel **30% dei pazienti**
- **Guarigione completa nel ~10%**



Original research

Multidisciplinary consensus guideline for the diagnosis and management of spontaneous intracranial hypotension

Sanjay Cheema ^{1,2}, Jane Anderson, ³ Heather Angus-Leppan ⁴, Paul Armstrong, ⁵ David Butteriss, ⁶ Lalani Carlton Jones, ^{7,8} David Choi, ^{1,9} Amar Chotai, ⁶ Linda D'Antona ¹⁰, Indran Davagnanam, ^{1,10} Brendan Davies, ¹¹ Paul J Dorman, ¹² Callum Duncan, ¹³ Simon Ellis, ¹¹ Valeria Iodice, ^{1,14} Clare Joy, ¹⁵ Susie Lagrata, ² Sarah Mead, ¹⁵ Danny Morland, ¹⁶ Justin Nissen, ¹⁷ Jenny Pople, ¹⁵ Nancy Redfern, ¹⁶ Parag P Sayal, ⁹ Daniel Scoffings, ¹⁸ Russell Secker, ¹⁵ Ahmed K Toma, ^{1,9} Tamsin Trevarthen, ¹⁵ James Walkden, ¹⁹ Jürgen Beck, ²⁰ Peter George Kranz, ²¹ Wouter Schievink, ²² Shuu-Jiun Wang, ^{23,24} Manjit Singh Matharu ^{1,2}

«Cefalea spinale»: approccio chirurgico

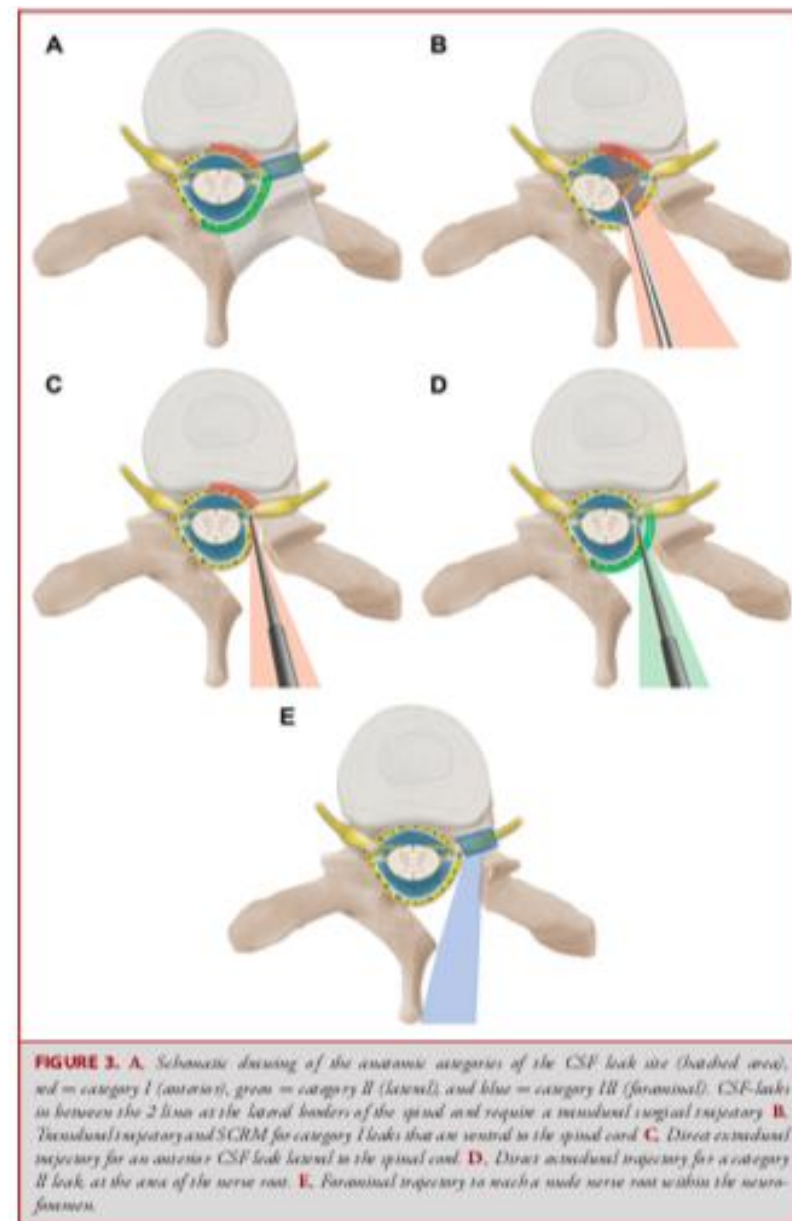
Un **unico approccio chirurgico** può essere applicato a **tutte le tipologie di fistola**

L'obiettivo principale è **«bloccare» la perdita di liquor**

È indispensabile disporre di **evidenza neuroradiologica preoperatoria**

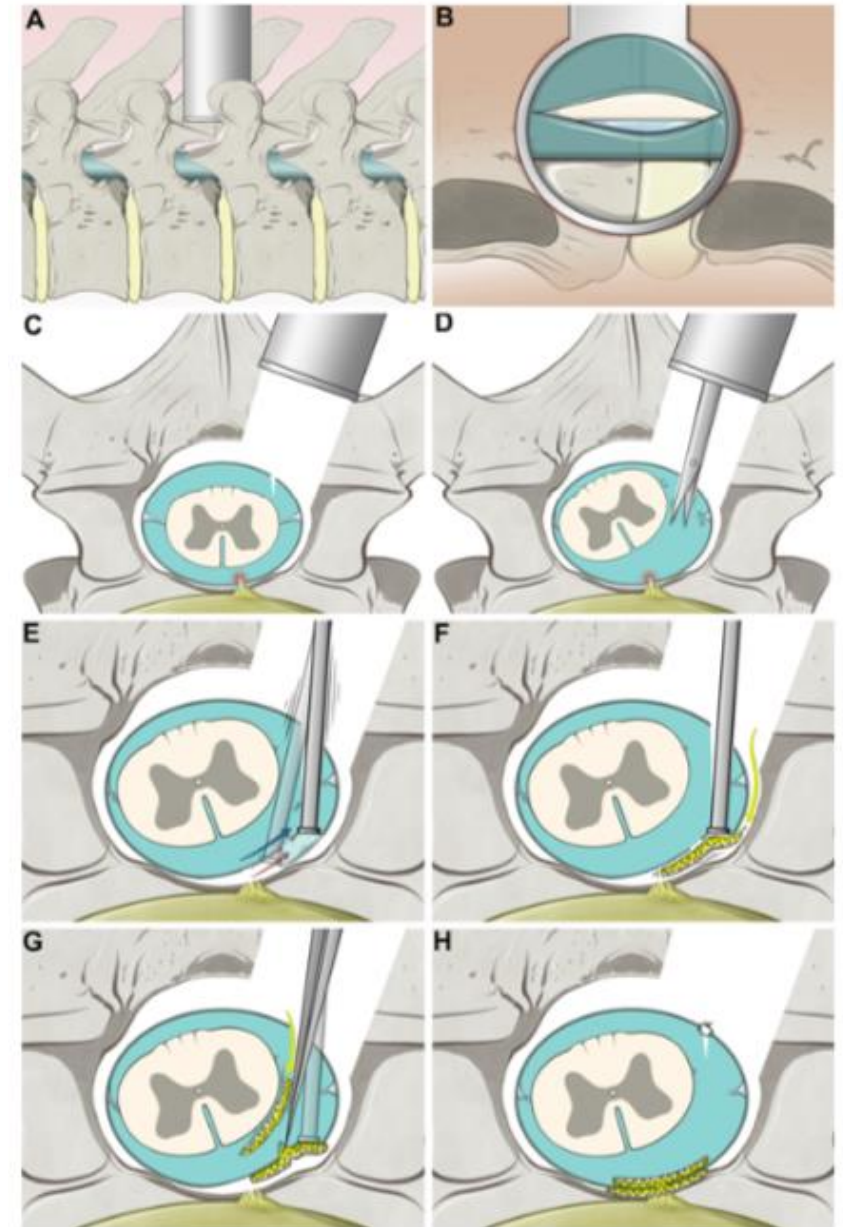
che definisca con precisione **sede e tipo della lesione**

Beck J, Raabe A, Schievink W, Fung C, Gralla J, Piechowiak E, Seidel K, Ulrich CT. Posterior Approach and Spinal Cord Release for 360° Repair of Dural Defects in Spontaneous Intracranial Hypotension. Neurosurgery. 2019 Jun 1;84(6):E345-E351. doi: 10.1093/neuros/nyy312. PMID: 30053151.



«Cefalea spinale»: approccio chirurgico

Tipo I



Beck J, Hubbe U, Klingler JH, Roelz R, Kraus LM, Volz F, Lützen N, Urbach H, Kieselbach K, Fung C. Minimally invasive surgery for spinal cerebrospinal fluid leaks in spontaneous intracranial hypotension. J Neurosurg Spine. 2022 Sep 9;38(1):147-152. doi: 10.3171/2022.7.SPINE2252. PMID: 36087332.