

BIOPSIE VERTEBROPLASTIE

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BIOPSIE VERTEBROPLASTIE

Biopsie :

Utilise même voie d'abord que
vertebroplastie

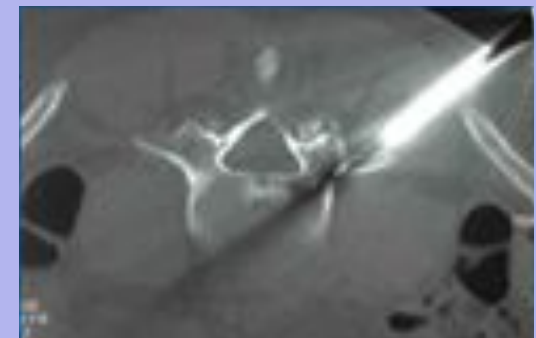
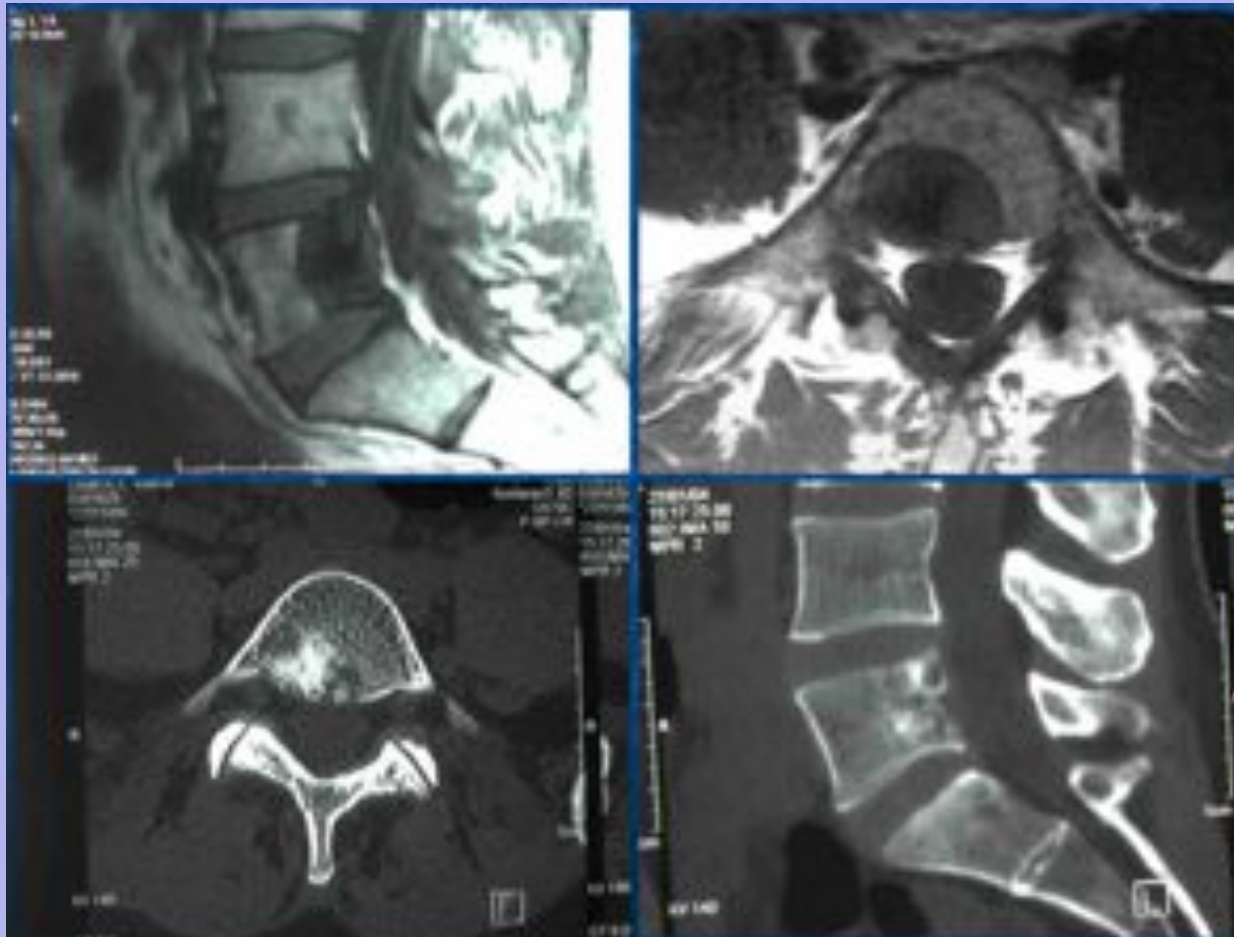
Peut être un premier temps avant
une vertebroplastie

Biopsie Rachis Indication

- Tumeurs
 - Infections
 - Lésions potentiellement actives
-
- Nécessité d'une preuve diagnostique
 - Traitements spécifiques

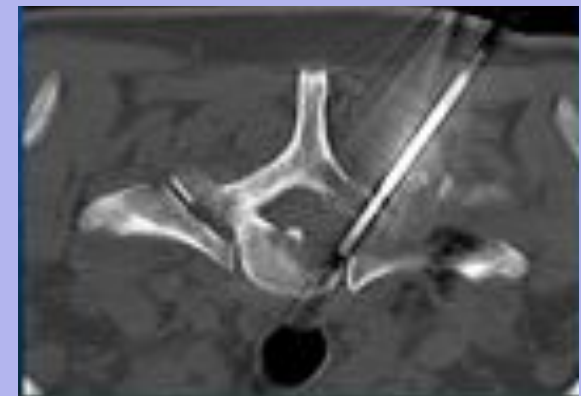
Bilan imagerie pré biopsie

IRM - TDM COMPLEMENTAIRE (TEP)



Moyen de guidage radiologique

- Le bon moyen de guidage: celui avec lequel on se sent le plus à l'aise.
- Je ne vois pas distinctement la cible sur les radiographies SCANNER
- Je vois distinctement la cible sur les radiographies FLUOROSCOPIE
- Double obliquité: Fluoroscopie recommandée ou couple Fluoro / Scanner

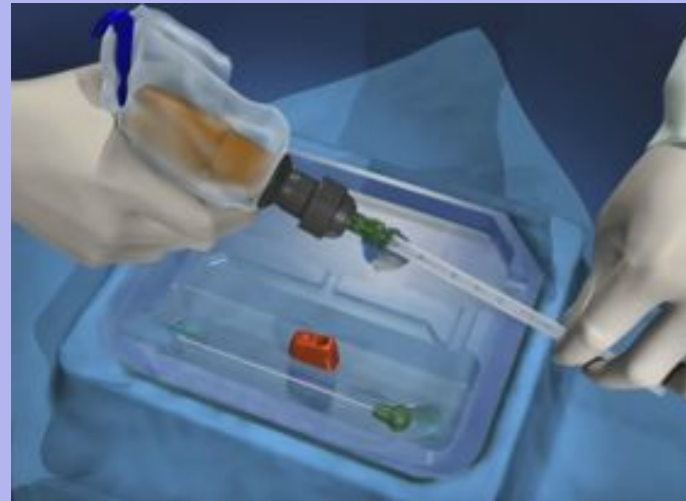


Trocart

Trocart direct ,trois pièces avec canule biopsique pour prélèvements multiples



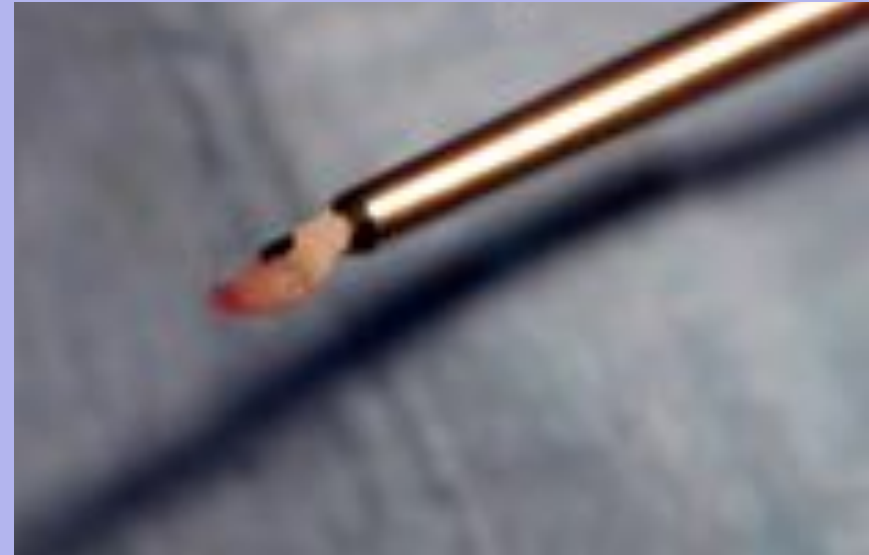
Intérêt d'un système MOTORISE



Ex: système On Control (Teleflex)

- Perceuse à batterie (500 procédures)
- Trocars simples ou co-axiaux

Intérêt d'un système MOTORISE

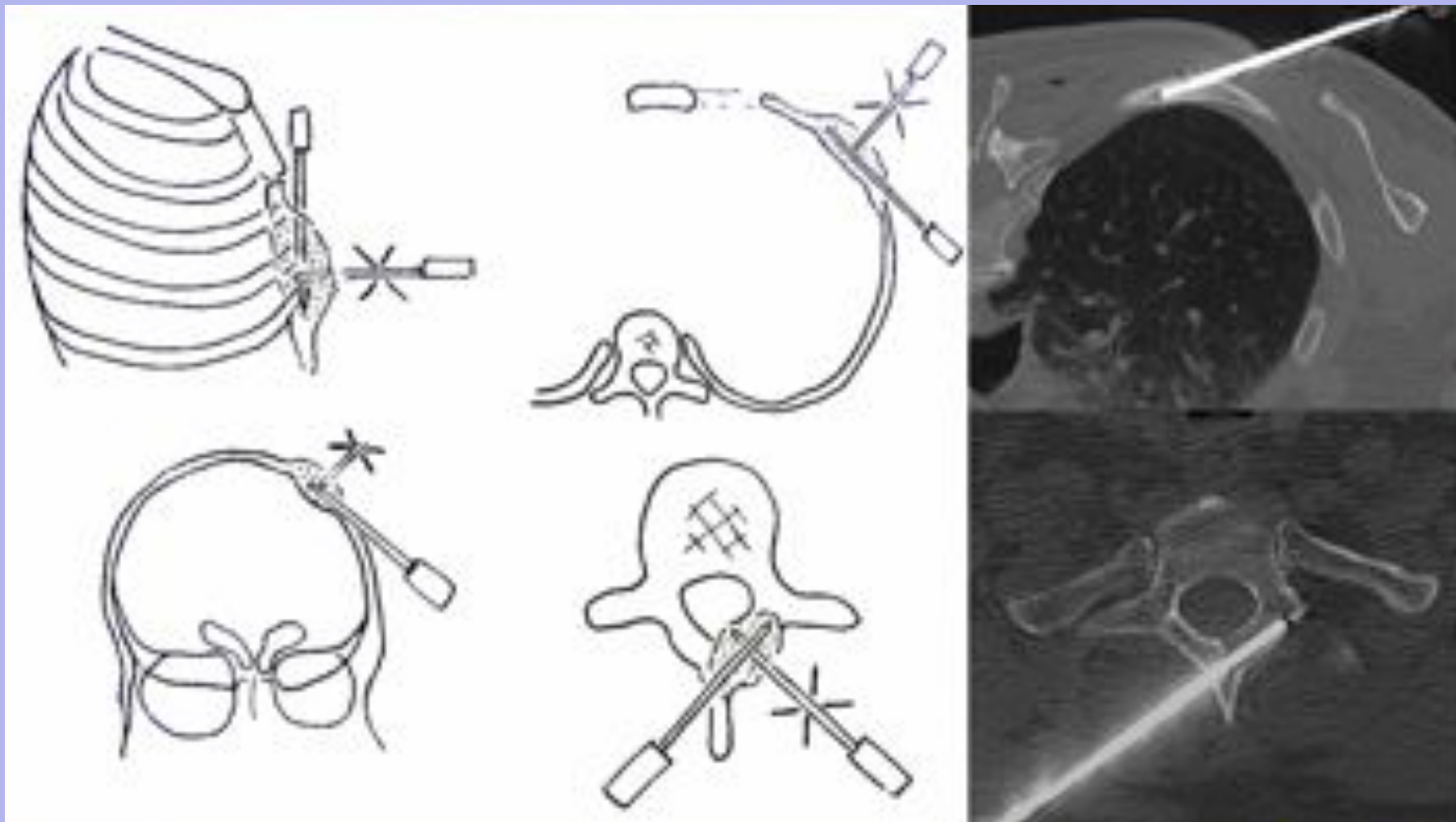


Ex: système On Control (Teleflex)

- Abord facile (os compact++)
- Prélèvements d' excellente qualité (20 X 2 mm)

Os plats: abord tangentiel

Sécurité et qualité du prélèvement



Voie d'abord et trocars

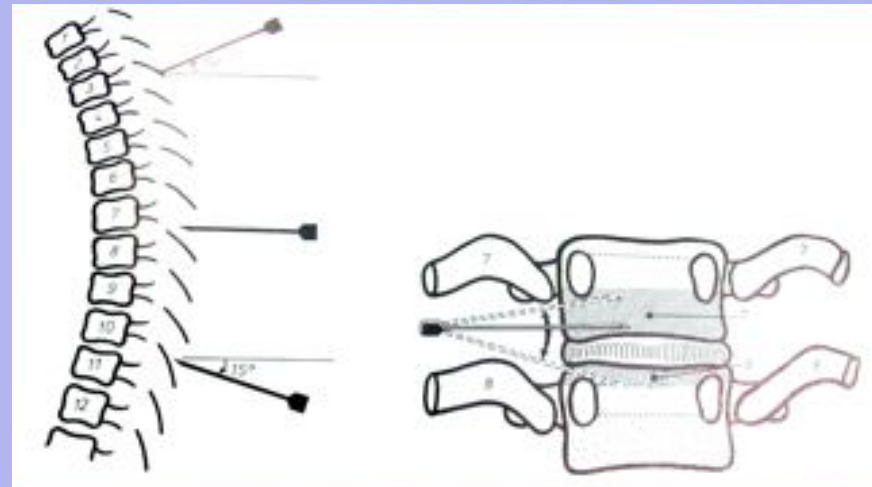
- Vertèbres thoraciques et lombaires
 - Voie transpédiculaire



Voie d'abord et trocars

- Vertèbres thoraciques et lombaires
 - Voie postéro latérale

Corps vertébral et disque

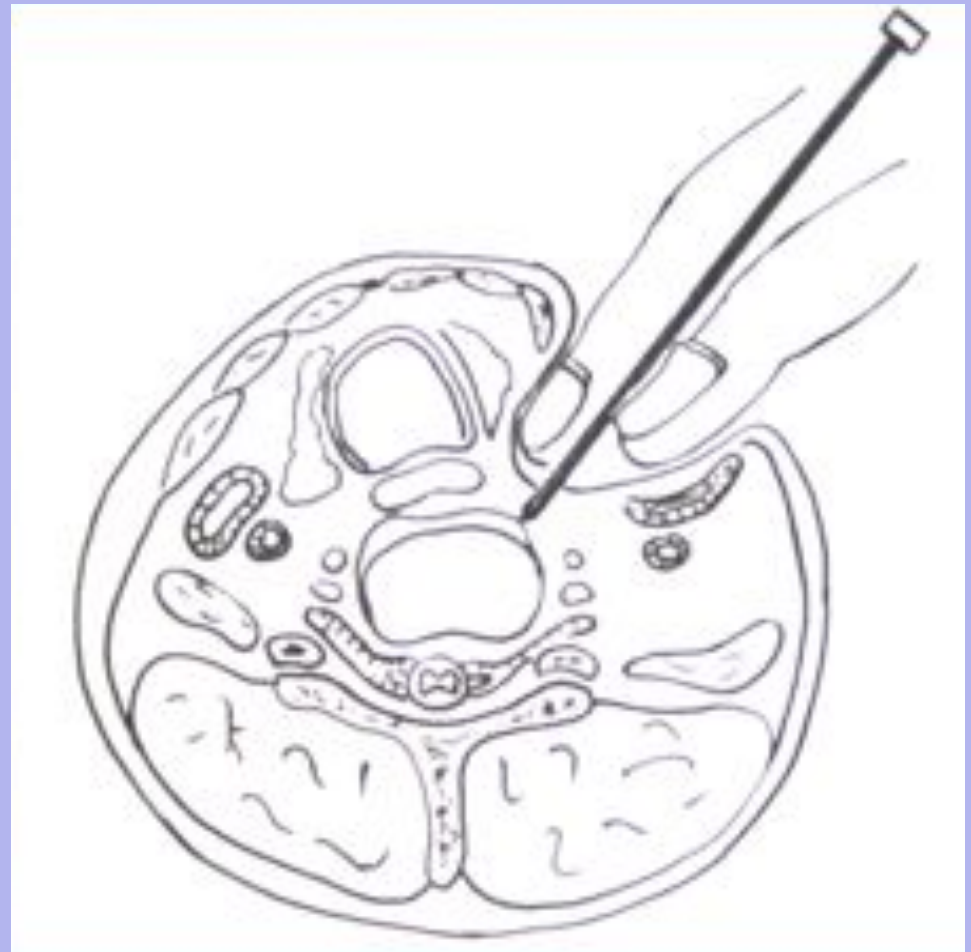
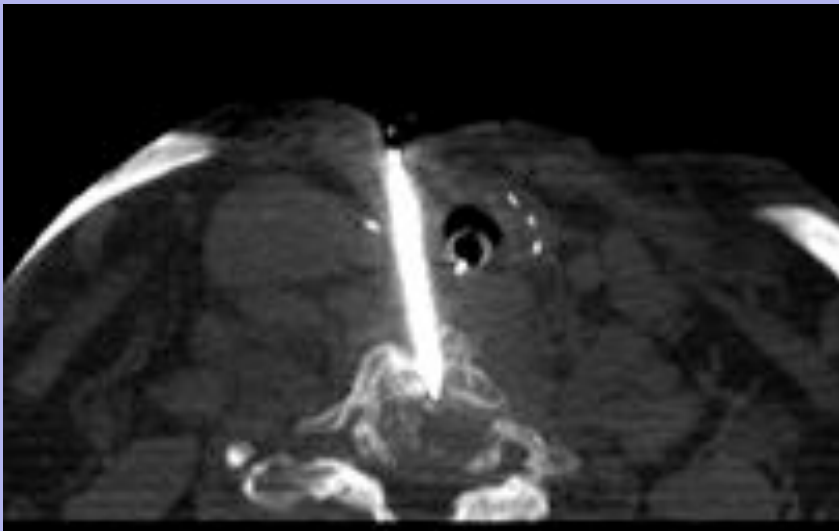


Voie d'abord et trocars

Rachis cervical

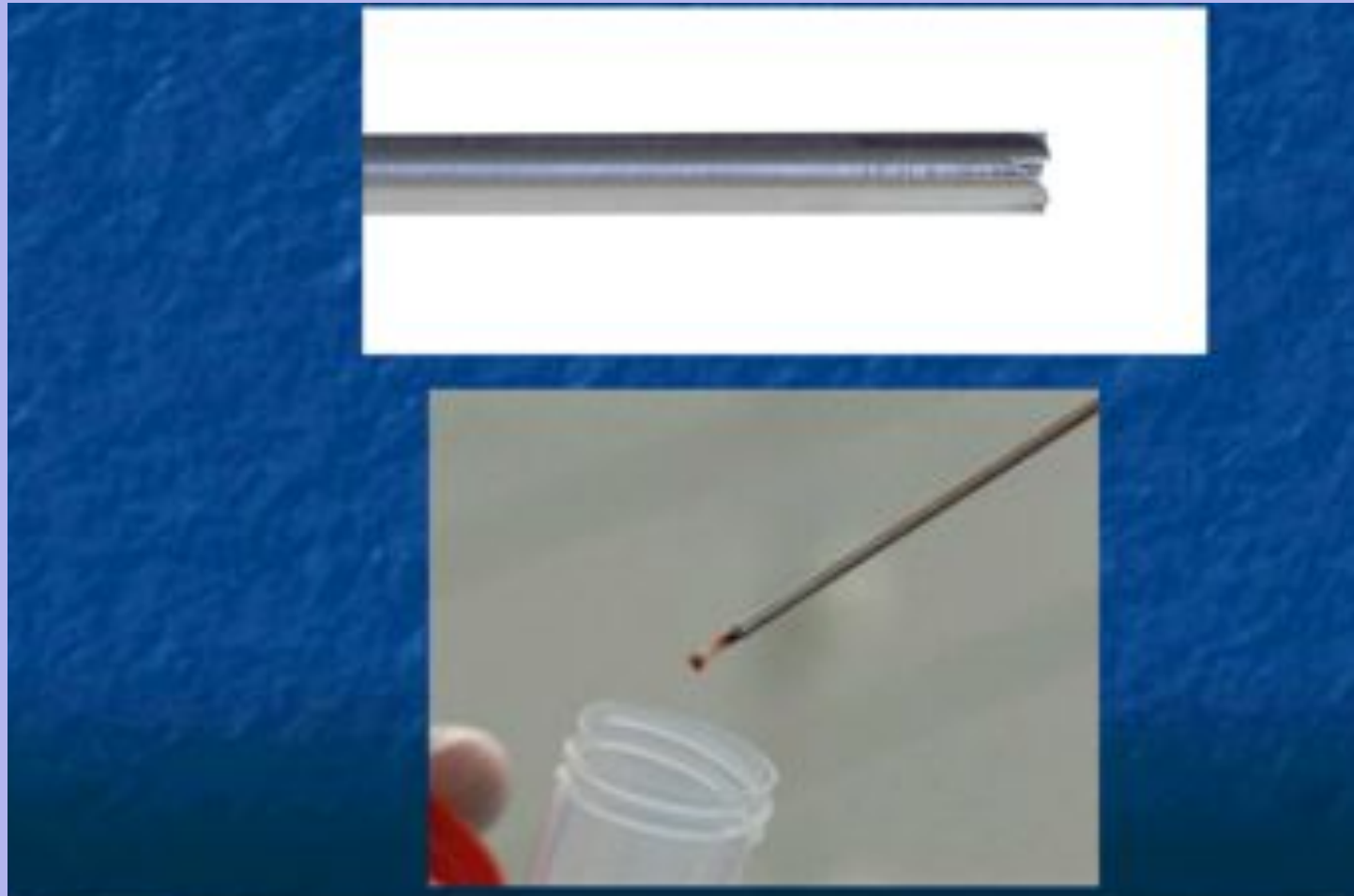
Abord antero latéral

Trocart coaxial



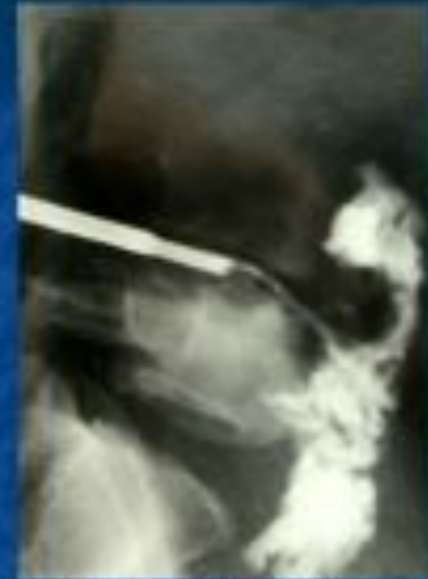


Prélèvements biopsiques



Infections

- Prélèvements de pus et de tissus
- Lavage du foyer au sérum physiologique
- S'assurer que les prélèvements arrivent rapidement au laboratoire de bactériologie et sont traités tout de suite
- Hémocultures dans les suites de la biopsie



VERTEBROPLASTIE

- **DEFINITION:** injection par voie percutanée de ciment acrylique dans une lésion osseuse sous guidage scopique et parfois TDM.
- **MECANISME:**
Effet antalgique obtenu par:
 - Immobilisation des micro fractures
 - Effet toxique du ciment sur les récepteurs nerveux locaux
 - Effet mécanique(compression)

TECHNIQUE

- Procédure sous anesthésie avec intubation
 sans intubation
 - Classiquement en procubitus
 - Salle d'angiographie biplan ou TDM
- Hospitalisation de 2 jours

TECHNIQUE

VOIE D'ABORD fonction du site

– Rachis cervical:

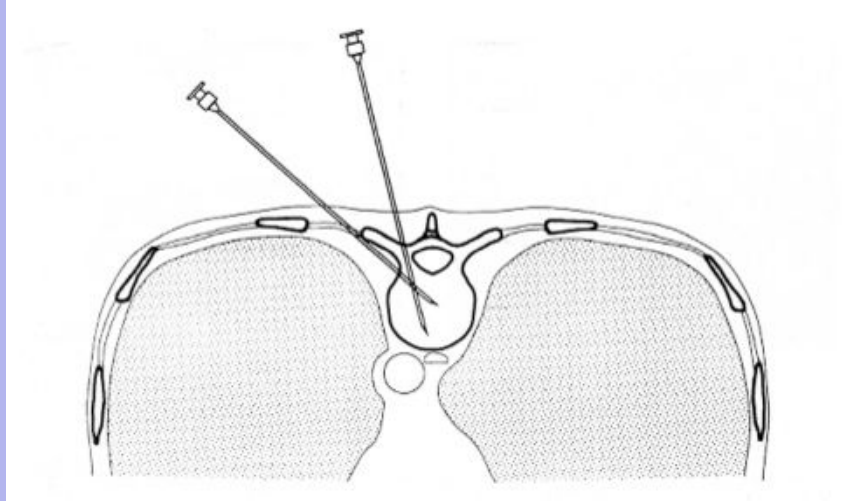
- C2 voie trans. buccale Biplan
- C3 C5 voie antero latérale.
- C6 C7 **voie trans. pédiculaire extra pediculaire** **Scanner rapide**

– Rachis dorsal:

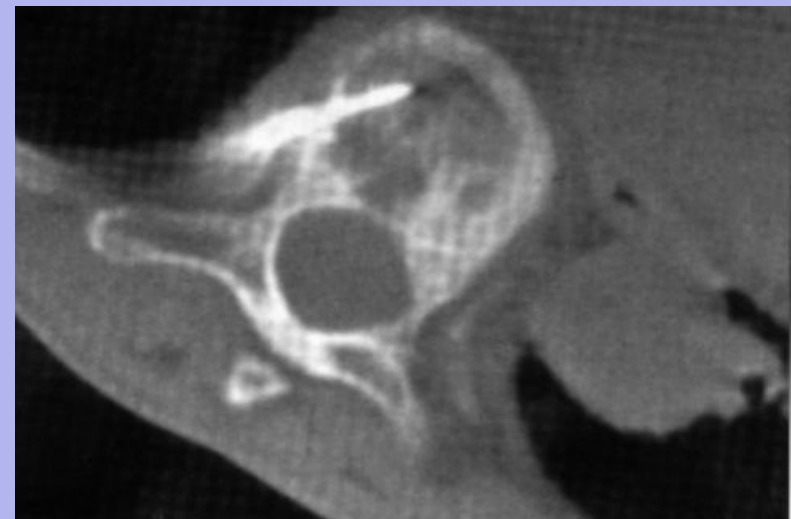
- T1 T5 **voie trans. pédiculaire extra pediculaire** **Scanner rapide**
- T6 T12 voie postéro latérale Biplan

– Rachis lombaire:

- L1 L5 voie postéro latérale Biplan



Voie transpediculaire



Voie postéro latérale

Materiel





TECHNIQUE

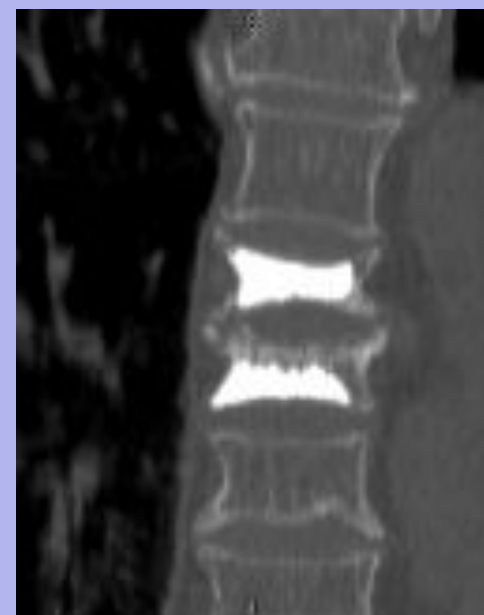
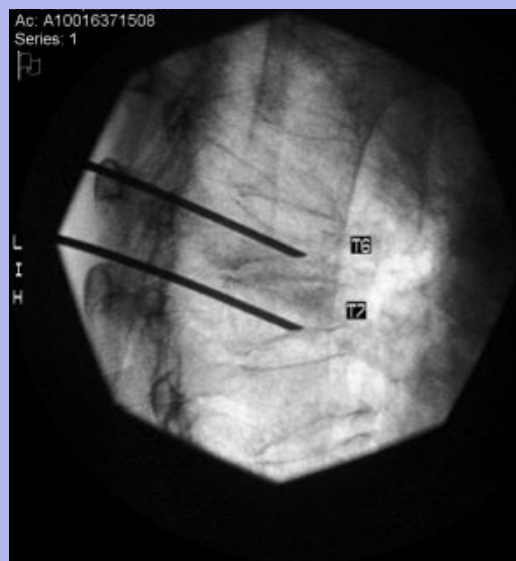
- TYPE DE CIMENT
 - Non résorbable acrylique
 - Palakost + tungstène + frigo
 - Résorbable phosphocalcique
 - Faible tenue mécanique en compression
 - Phase visqueuse très courte

TECHNIQUE

- Quantité injectée:
 - Ft de la taille de la vertèbre
 - Ft de son état:
 - Tassement en galette
 - Vertèbre déshabillée ou condensée

Nécessité d'une stabilité mécanique suffisante

Injection dans les 2/3 antérieur de la vertèbre





VERTEBROPLASTIE

CONTRE INDICATION:

- Absolue:
 - Troubles de la coagulation non corrigeable.
 - Infection osseuse in situ ou de voisinage.
 - Compression médullaire ou radiculaire **symptomatique**
- Relative:
 - Rupture majeure du mur postérieur et mauvaise visibilité
 - Tassement en galette.
 - CInd. à anesthésie générale ou forte sédation.

INDICATION

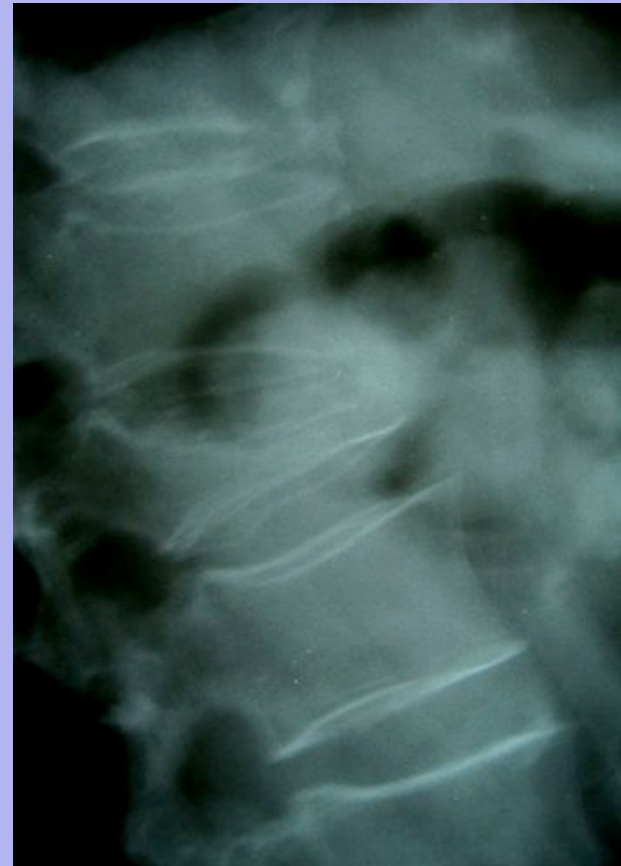
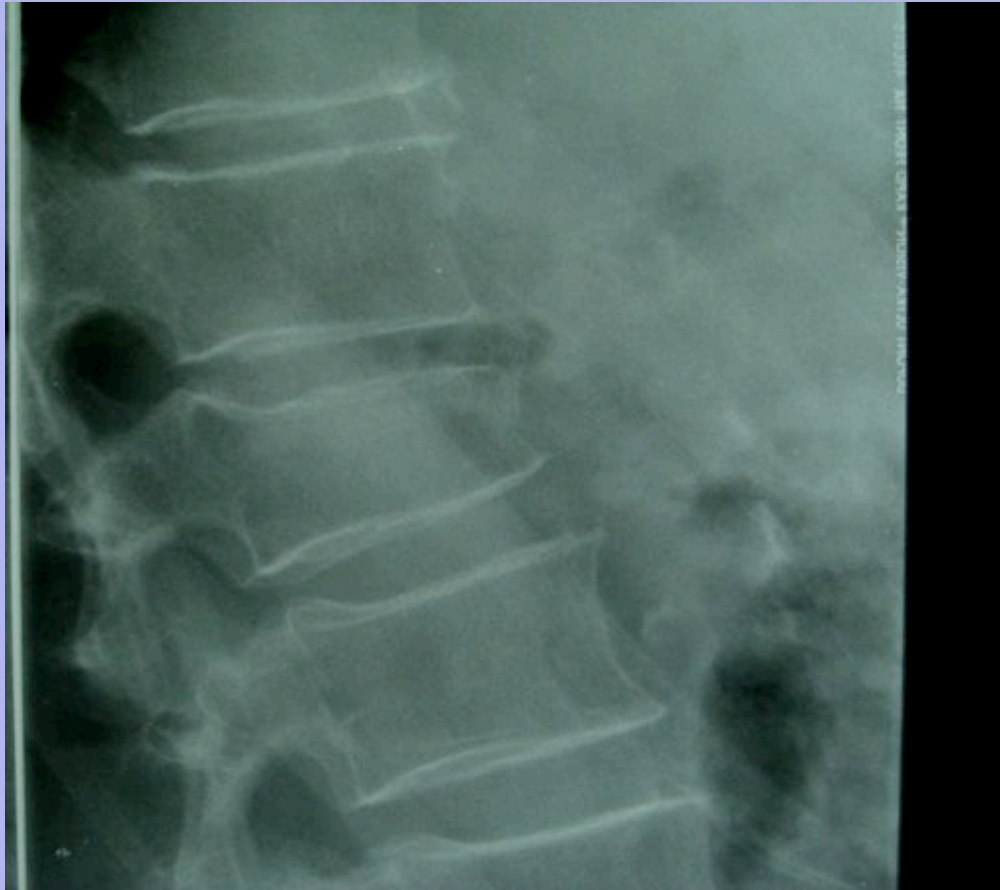
- TRAUMATISME RECENT
- OSTEOPOROSE
- METASTASE
- ANGIOMES VERTEBRAUX SYMPTOMATIQUES

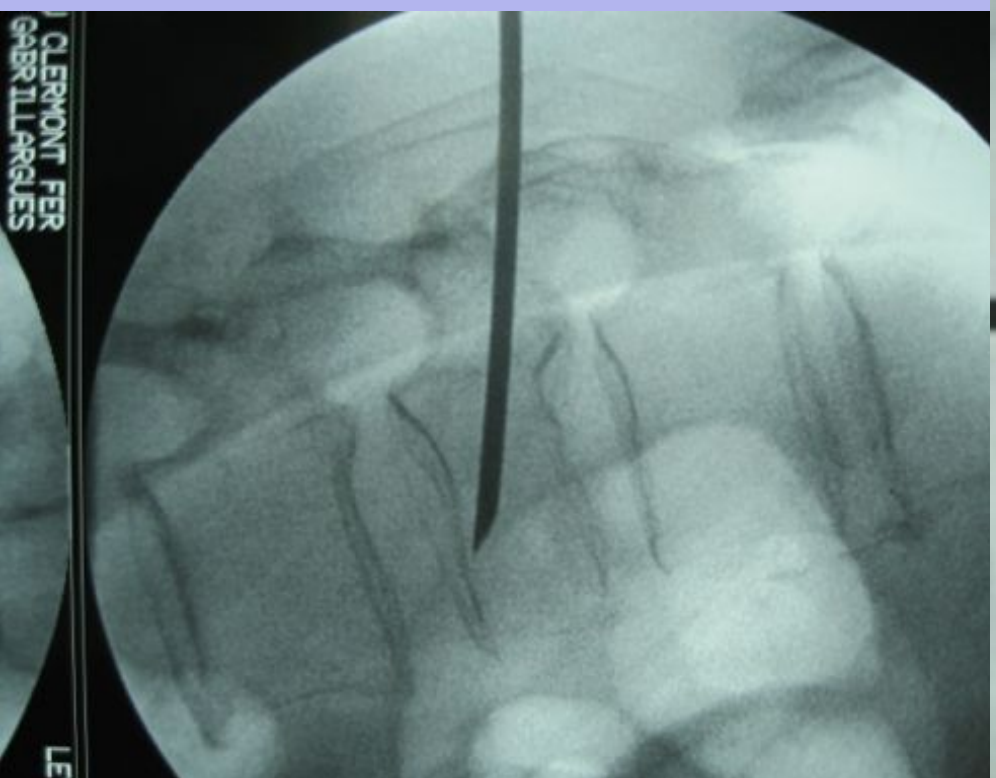


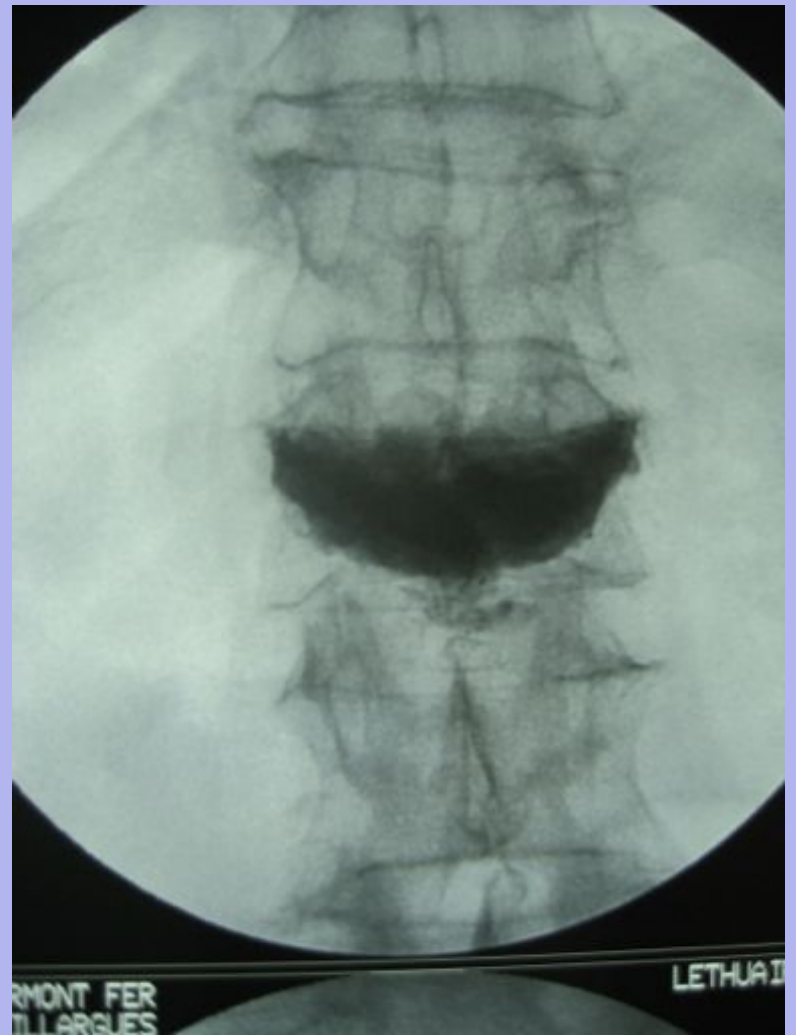
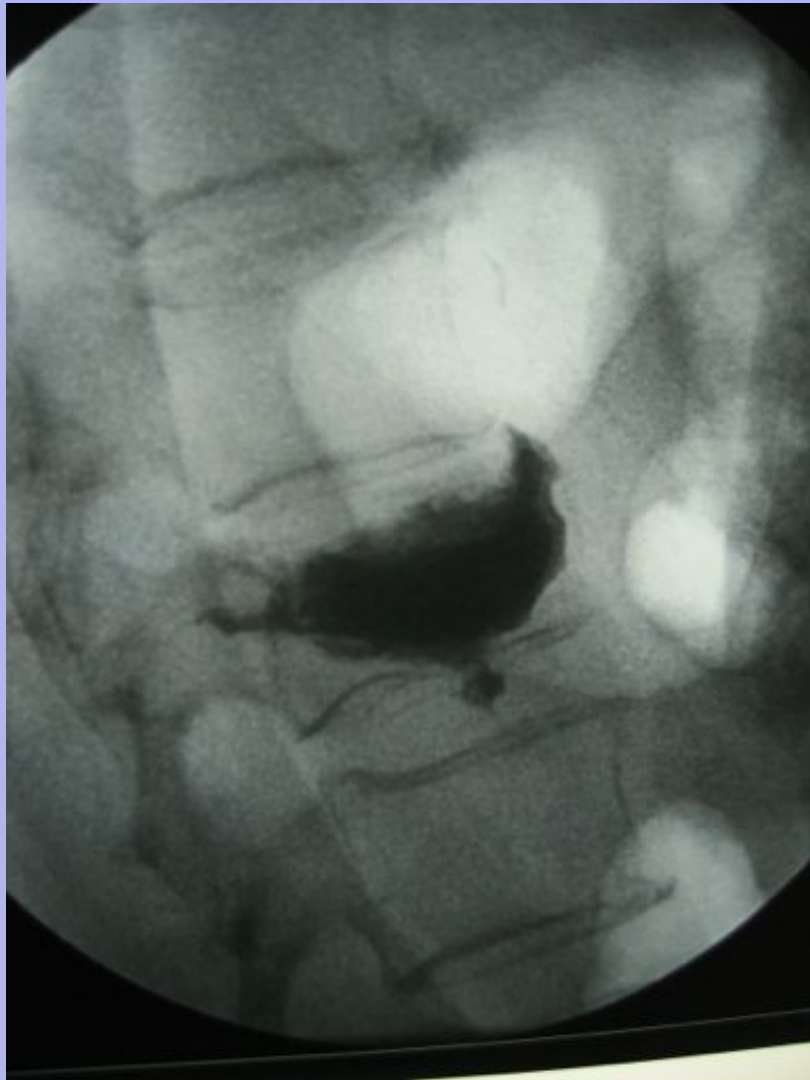
Traumatisme recent

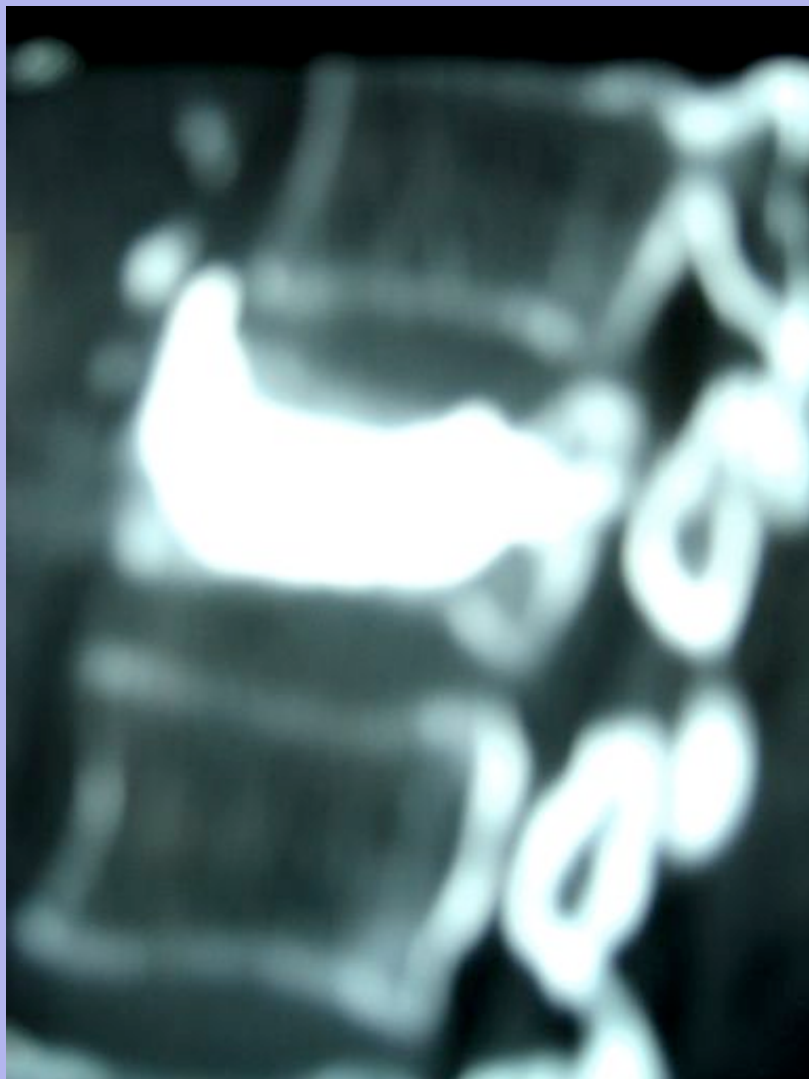
- Fracture tassement du corps vertebraal
 - Type A de Magerl
- Fracture stable
- Absence de signe neurologique
- Fracture instable montage court chirurgical
vertebroplastie complementaire

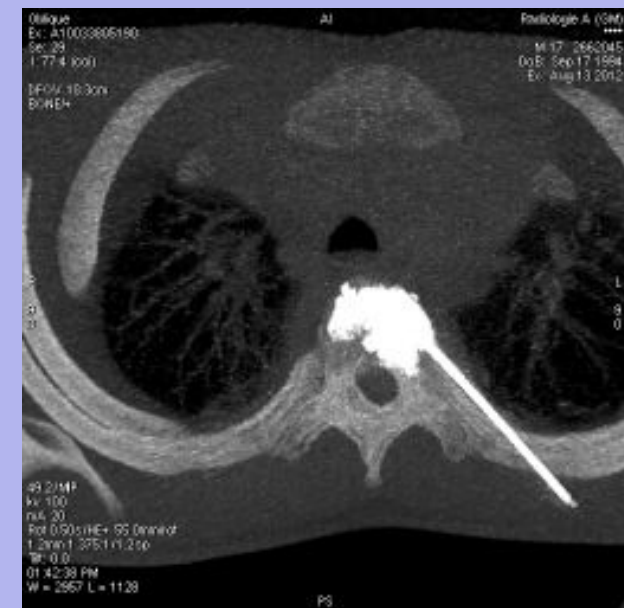
Traumatisme recent





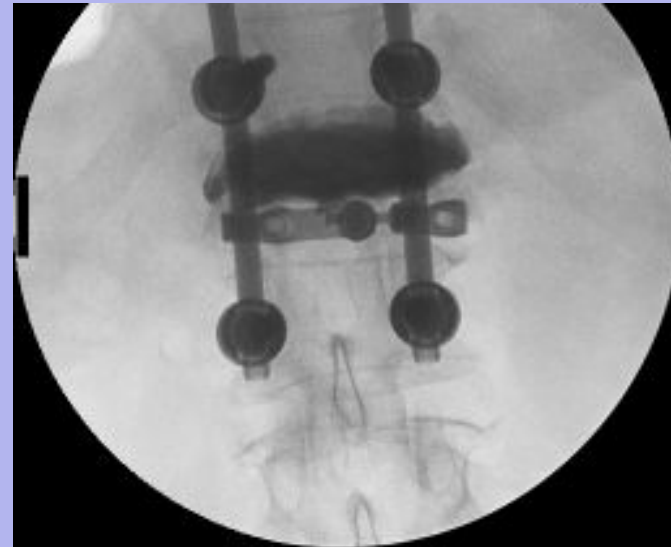
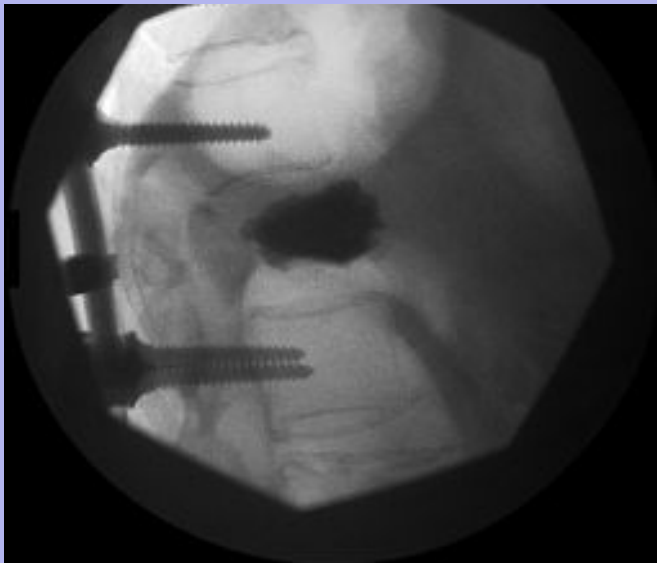
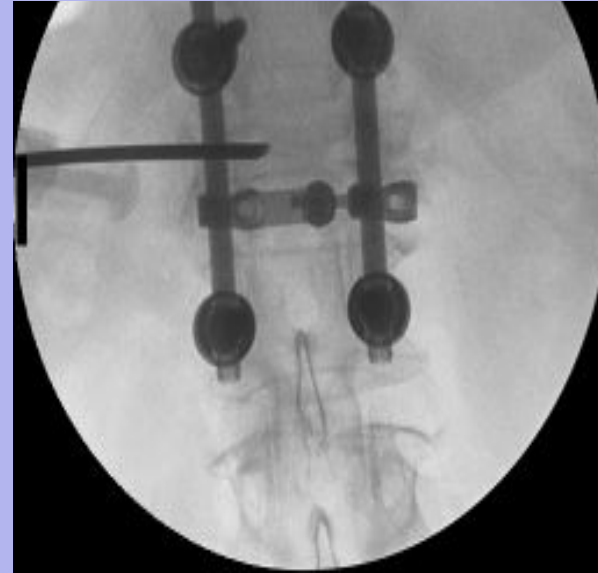
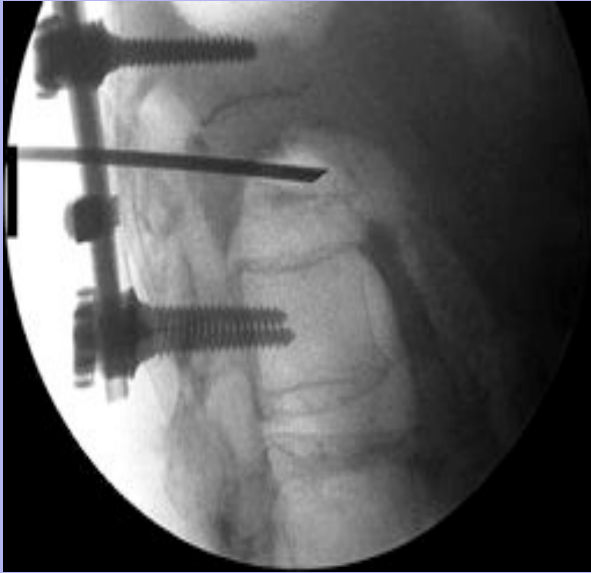


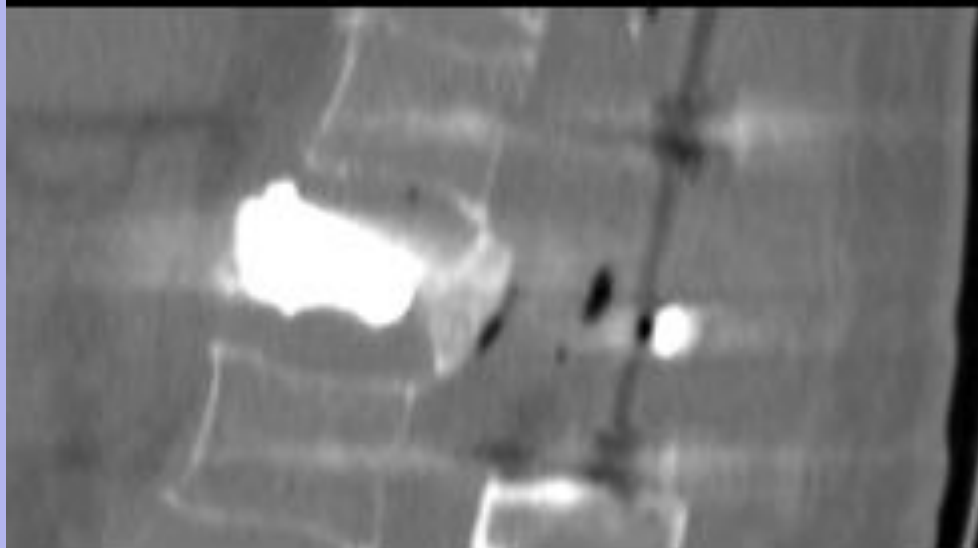




Vertebroplastie + corset

Traumatisme recent et chirurgie





Etude VOLCANO

VertebrOplasty versus Conservative treatment in Acute Non Osteoporotic fractures

**A Mons, E Hugonnet, B Jean, J
Gabrillargues, B Pereira,
E Chabert**



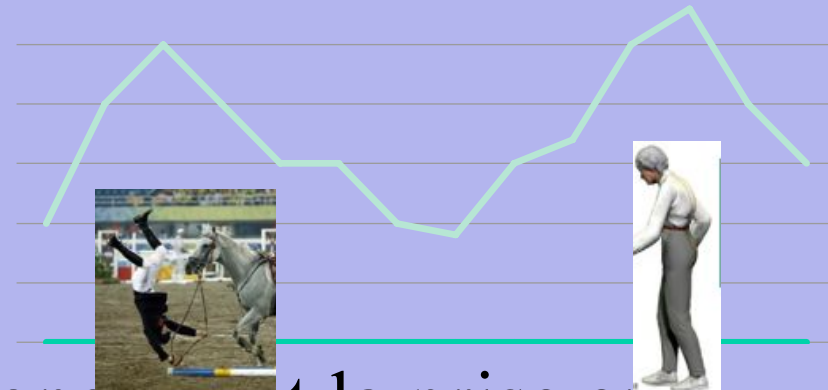
CHU Clermont-Ferrand, France

Problématique

❧ Les tassements vertébraux sont une **pathologie fréquente** avec deux étiologie principales :

❧ *Ostéoporose*

❧ *Traumatisme*



❧ **Absence de consensus** concernant la prise en charge des tassements vertébraux d'origine traumatique sans indication chirurgicale

❧ Pas d'étude prospective publiée à ce jour

VOLCANO

UNE ETUDE

- **Monocentrique**
 - CHU Clermont-Ferrand
 - Neuroradiologie / Neurochirurgie
- **Prospective**, menée de 2010 à 2013
- **Randomisée**

OBJECTIFS

- **PRINCIPAL : Vertébroplastie VS Corset**
en terme de *handicap fonctionnel* (score EIFEL) à 1, 3 et 6 mois.
- **SECONDAIRES :**
 - *Douleur* (EVA) à 48H, 1, 3 et 6 mois.
 - *Qualité de vie* (SF-36) à 1, 3 et 6 mois.
 - *Anatomie* (hauteur des corps vertébraux et angle de cyphose) à 1, 3 et 6 mois.

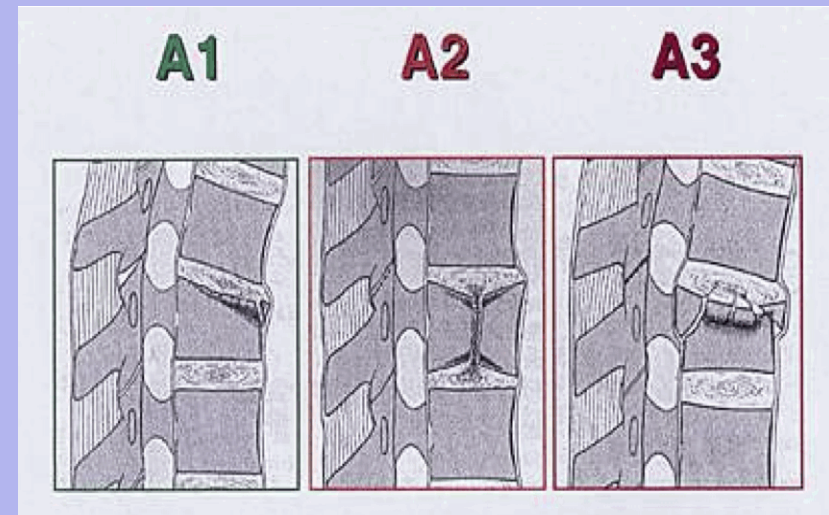
Critères d'inclusion/exclusion

❧ Critères d'inclusion:

- ❧ Patient volontaire âgé de 18 à 70 ans
- ❧ Fracture type A selon Magerl
- ❧ Traumatisme récent (< 15 jours)

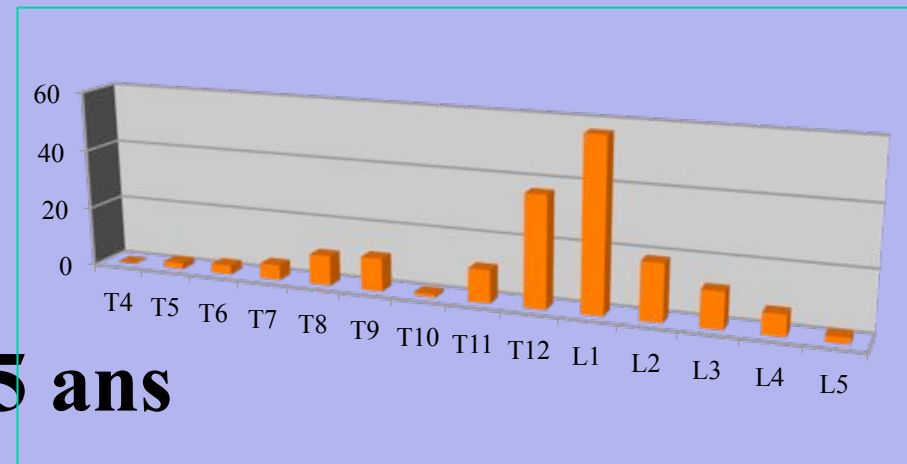
❧ Critères d'exclusion:

- ❧ Fracture de C1 à T3
- ❧ Fracture de l'arc postérieur associée
- ❧ Recul significatif du mur postérieur
- ❧ Troubles neurologiques secondaires à l'atteinte rachidienne
- ❧ Traumatisme crânien avec Glasgow < 15
- ❧ Néoplasie évolutive
- ❧ Traitement antalgique chronique
- ❧ Infection locale ou systémique
- ❧ Coagulopathie



Population

- **99 patients** inclus
- Moyenne d'âge : **45 ans**
- **Prédominance masculine** : 65%
- Plusieurs étages fracturés dans 25% des cas
- Autres fractures associées dans 25% des cas





Vertébroplastie

- Anesthésie générale
- Contrôle scopique
- Abord postéro-latéral unilatéral
- 2,5 à 10 ml de Ciment
 - *Osteofirm (Cook)*
 - *Osteopal (Haereus)*
 - *Palakos*

Procédures

VERSUS



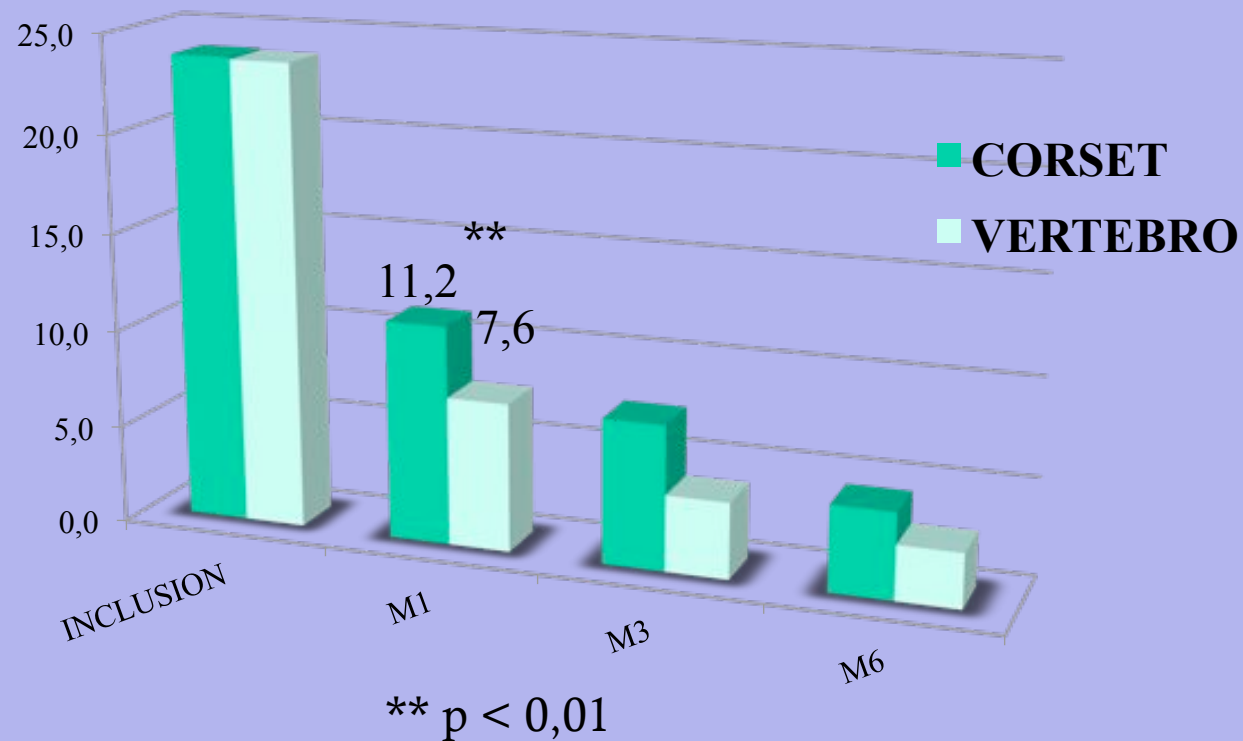
Corset

- ∞ Décubitus strict jusqu' à la confection du corset
- ∞ Corset dorso-lombaire
- ∞ Port du corset pendant 3 mois minimum

RESULTATS

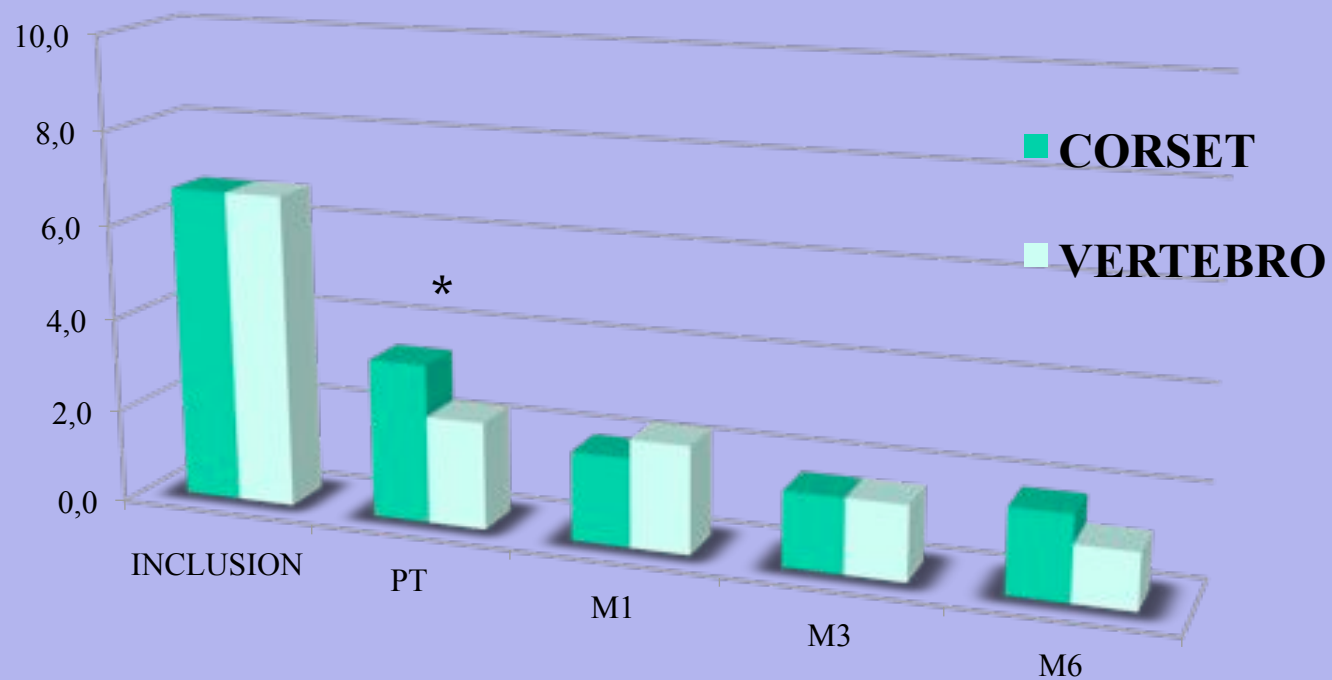
Objectif principal

Handicap fonctionnel Score EIFEL



Objectifs secondaires 1

Douleurs EVA



* $p < 0,05$

Objectifs secondaires 2

SF-36 Psychologique



SF-36 Physique



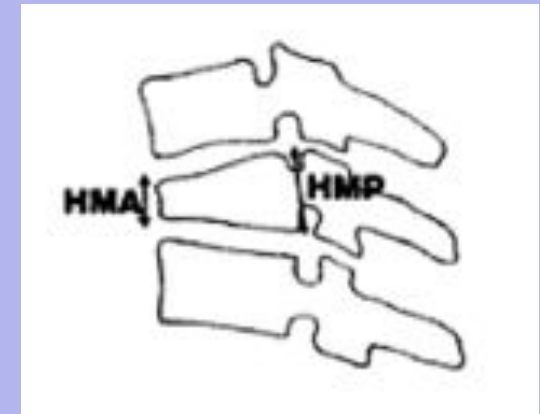
Qualité de vie
SF-36

* $p < 0,05$

Données anatomiques

Hauteur du mur antérieur (mm)

Objectifs secondaires 3.1

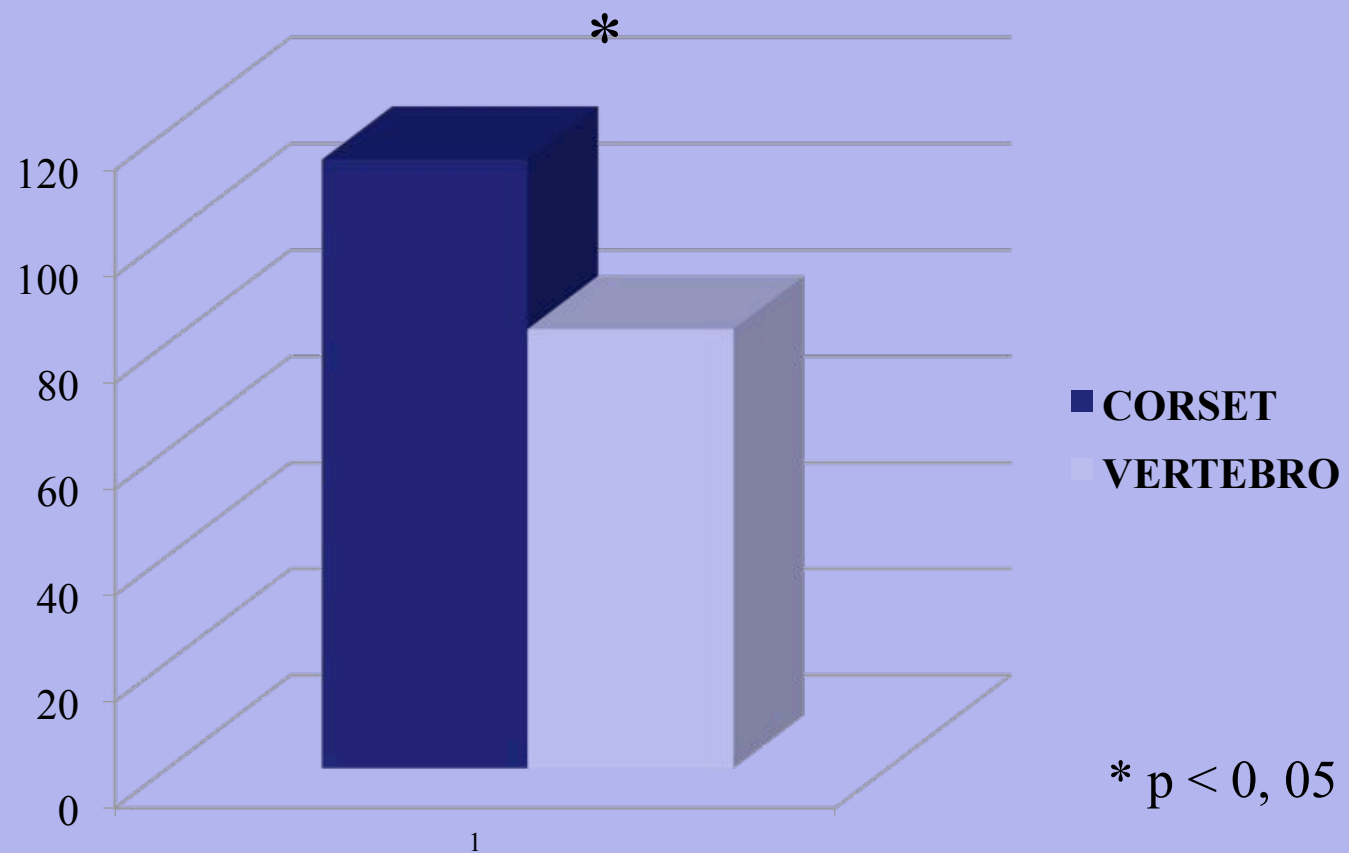


■ CORSET
■ VERTEBRO

* $p < 0,05$

Données accessoires

Durée d'arrêt de travail



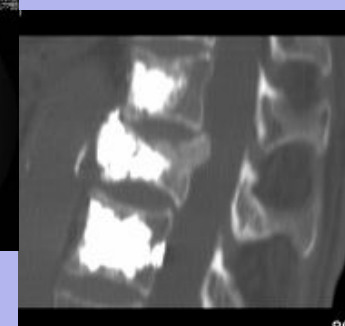
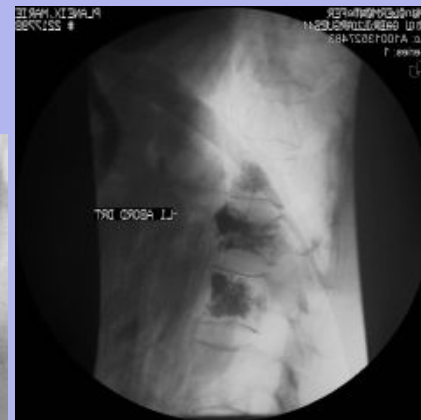
CONCLUSION

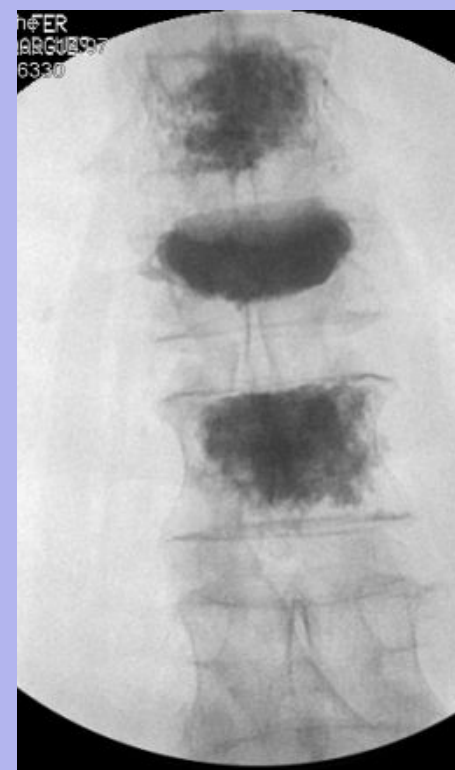
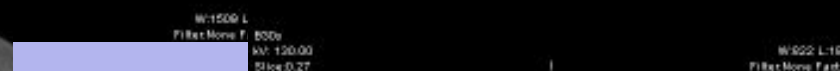
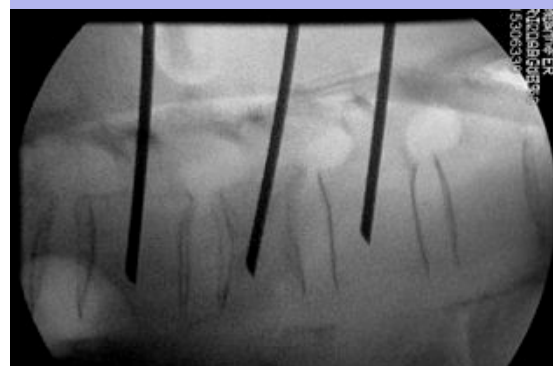
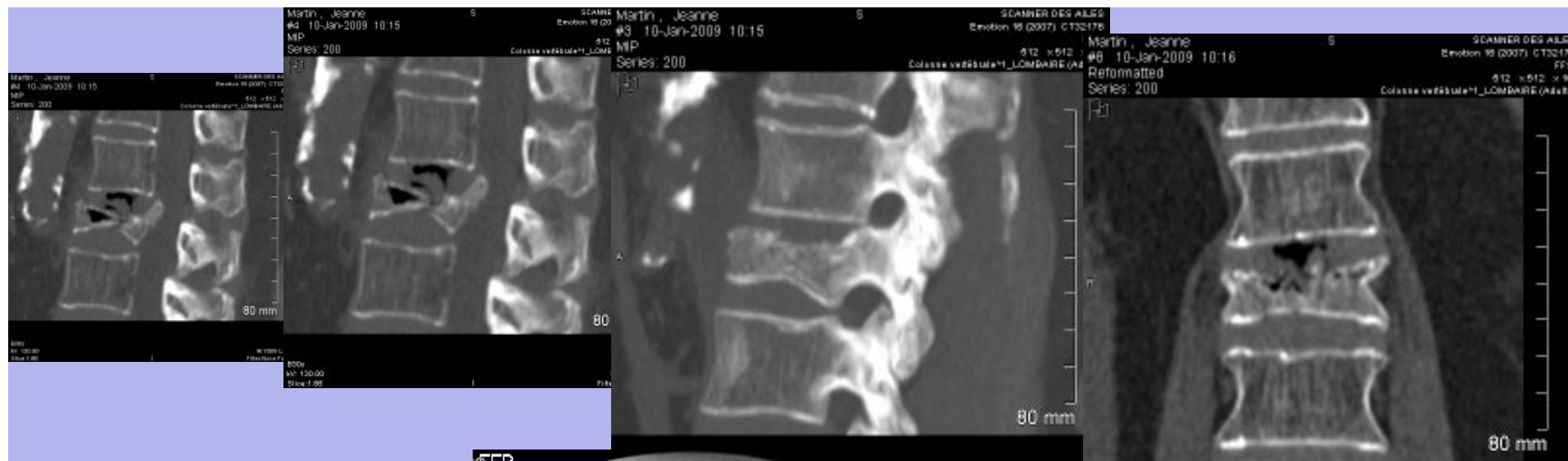
- La **vertébroplastie** permet :
 - une *meilleure récupération* en terme de *handicap fonctionnel* et de *qualité de vie*
 - de *soulager plus rapidement la douleur*

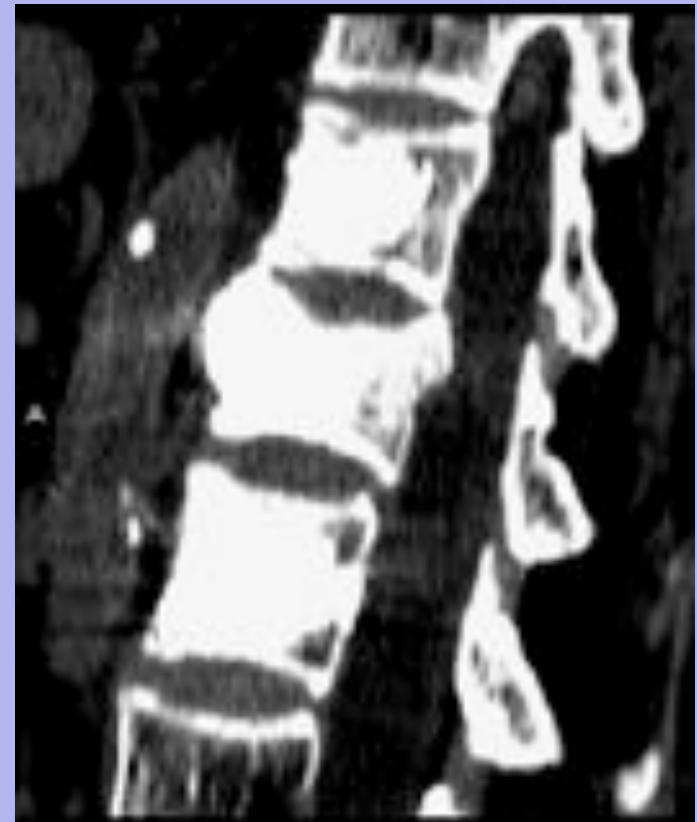
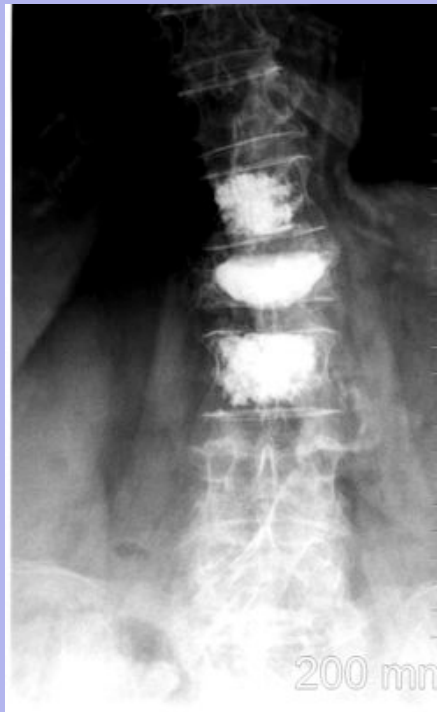
OSTEOPOROSE

- **Tassement récent**

- Douleur
 - Age élevé
 - Important
 - Stable, piliers postérieurs respectés
 - Zone charnière
-
- Bilan TDM indispensable
 - Délai de réalisation possible dès la 24eme heure







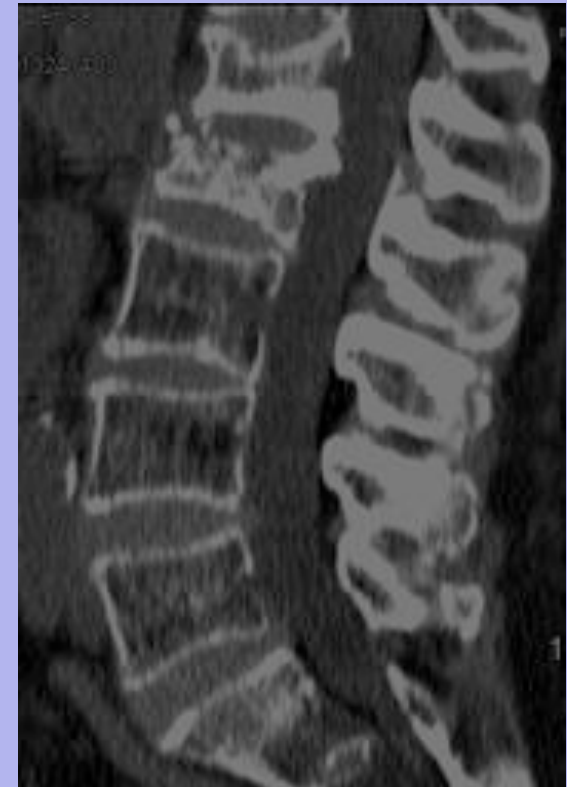
OSTEOPOROSE

- **Tassement ancien**

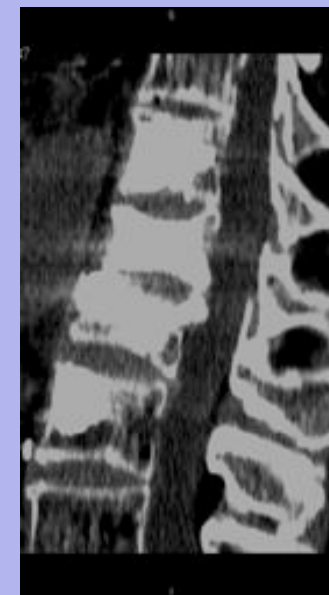
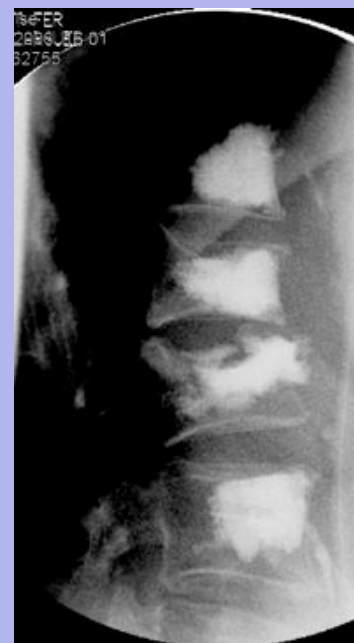
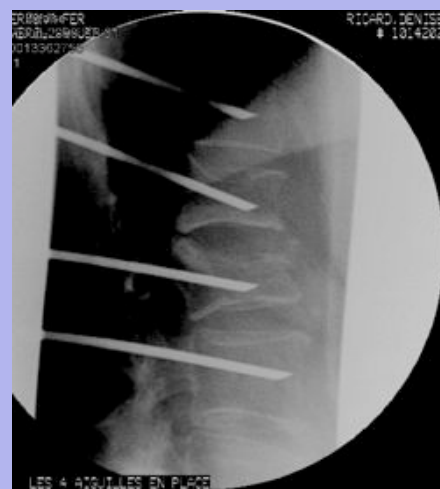
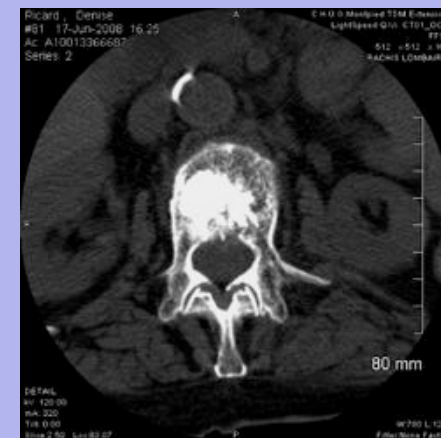
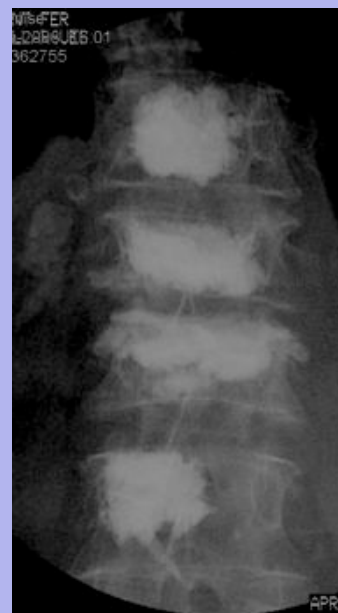
- Douleur localisée à rapporter au tassement.
 - Fracture non consolidée
 - Nécrose aérique
 - Zone charnière dorsolombaire
-
- Bilan IRM T2 fat sat ou STIR
 - Hyper signal signe le caractère actif de la fracture
 - A confronter au site de la douleur
 - Permet de cibler le ou les tassements à traiter si multiples
 - Bilan TDM état osseux
 - **Intérêt du traitement contre osteoporose++++++**



IRM T2 FAT SAT



TDM



Preventive Vertebroplasty for Adjacent Vertebral Bodies: A Good Solution to Reduce Adjacent Vertebral Fracture after Percutaneous Vertebroplasty

FREE TO ACCESS

C.H. Yee^{A,B,C}, M.M.H. Teng^{A,B,C}, W.H. Yean^{A,C}, Y.C. See^A and C.Y. Chang^{A,C}

Author Affiliations

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Abstract

BACKGROUND AND PURPOSE: Adjacent VCF frequently occurs after percutaneous vertebroplasty. Our aim was to evaluate PVP in the prevention of PVP-adjacent VCF.

MATERIALS AND METHODS: Radiographs of 68 patients who initially presented with a single-level untreated fracture and underwent vertebroplasty were retrospectively reviewed for the occurrence of PVP fracture. Patients in the nonpreventive group ($n = 33$) underwent TVP only for a vertebra with an untreated fracture. The preventive group ($n = 35$) underwent PVP combined with TVP. We injected bone cement into the caudal part of the superior adjacent vertebra and the cephalic part of the inferior adjacent vertebra to perform PVP.

RESULTS: The incidences of PVP fracture in adjacent vertebra next to a vertebra cemented at the patient's first vertebroplasty (within 6 months: 36% versus 3%, $P = 0.12$; within 1 year: 30% versus 3%, $P = .006$; >1 years: 30% versus 3%, $P = .006$) markedly decreased in the preventive group compared with the nonpreventive group. PVP fracture was found in 26% of vertebrae adjacent to the first TVP level in the nonpreventive group and in 2% of vertebrae adjacent to a PVP level in the preventive group after inclusion of all PVP procedures. Approximately 33% of patients in the nonpreventive group underwent repeat vertebroplasty, mainly due to adjacent fractures. Only 3% of patients in the preventive group underwent repeated procedures. None of

CONCLUSIONS: Preventive vertebroplasty for the adjacent vertebra combined with TVP for the fractured vertebra is effective in the prevention of propagation of PVP-adjacent fractures, thus reducing the necessity of multiple repeat vertebroplasty procedures.

This Article

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April 2012; 11: 625-632

• Abstract
• Figures Only
• Full Text
• PDF

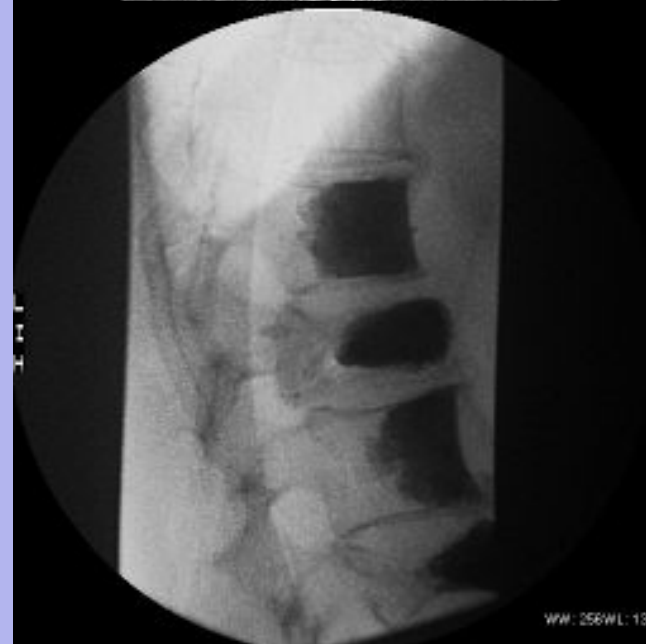
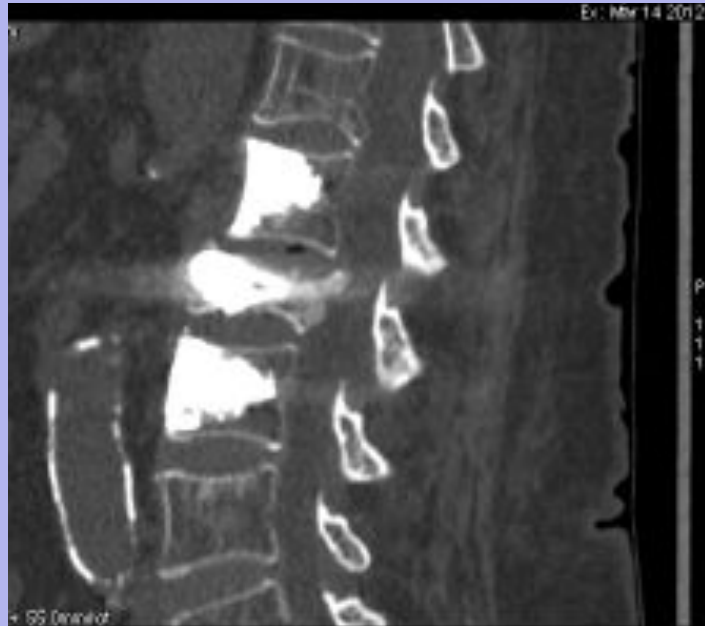
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Tassements post cortisoniques



VERTEBROPLASTIE

RESULTATS

- Effet antalgique précoce 36H en moyenne
- Réduction importante des douleurs:
 - 90% cas tassement osteoporotique

METASTASES

•
•

- Métastases ostéolytiques
- Myelome, Plasmocytome solitaire

A Visée

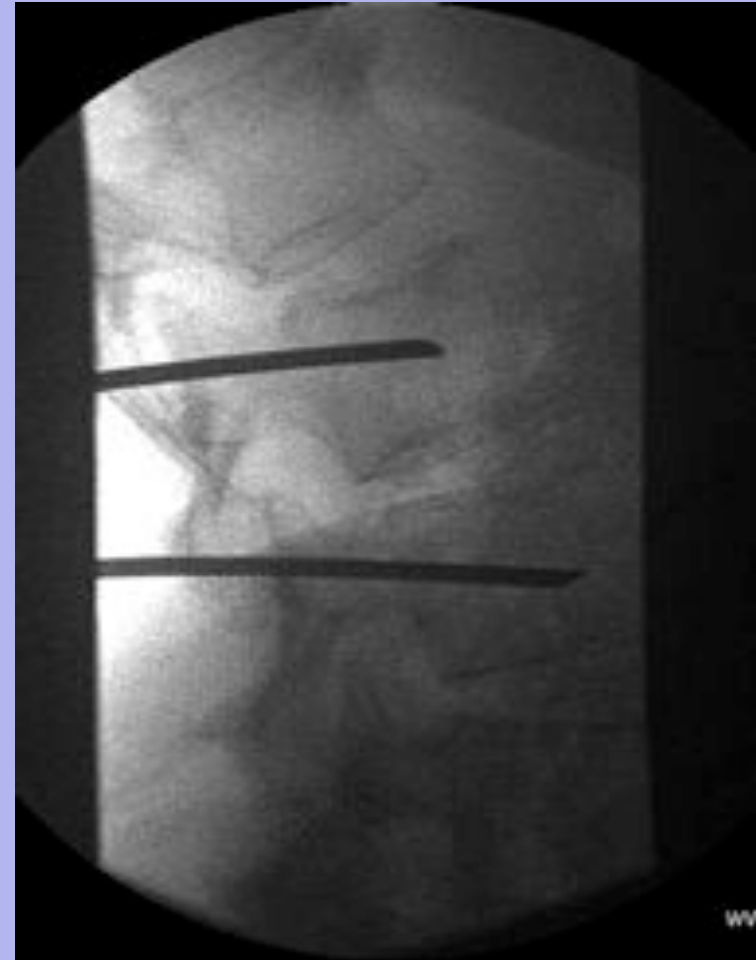
- Antalgique.
- Consolidation .

INJECTION DE BDC



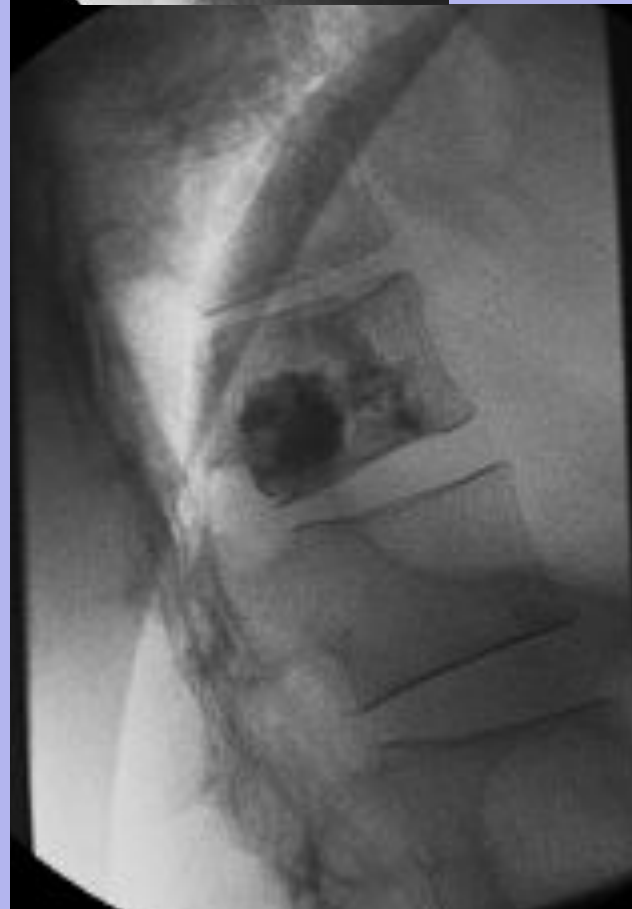
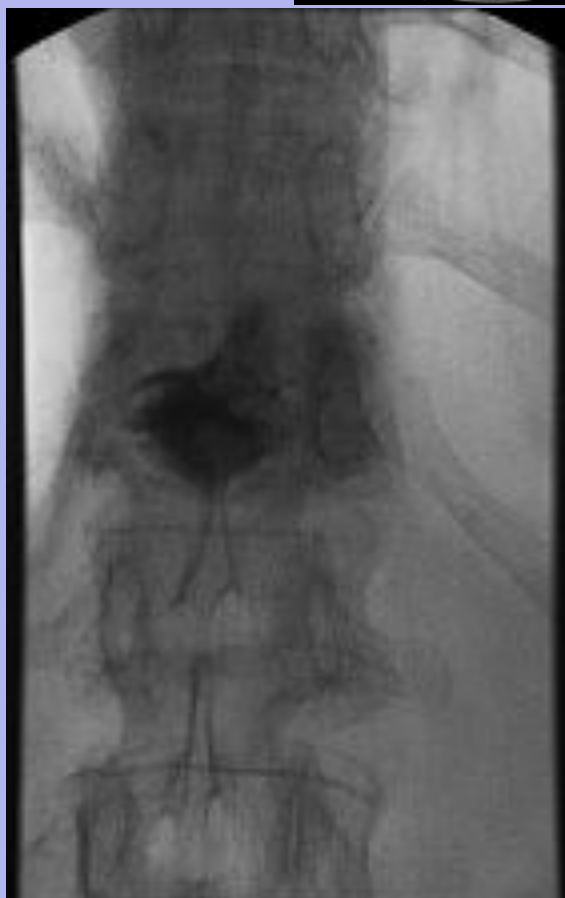
Metastase lytique

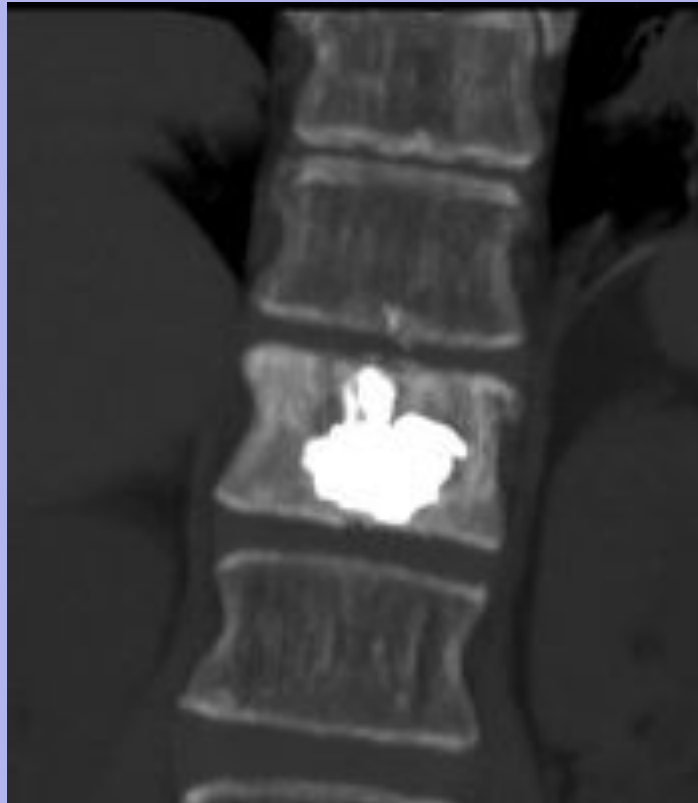










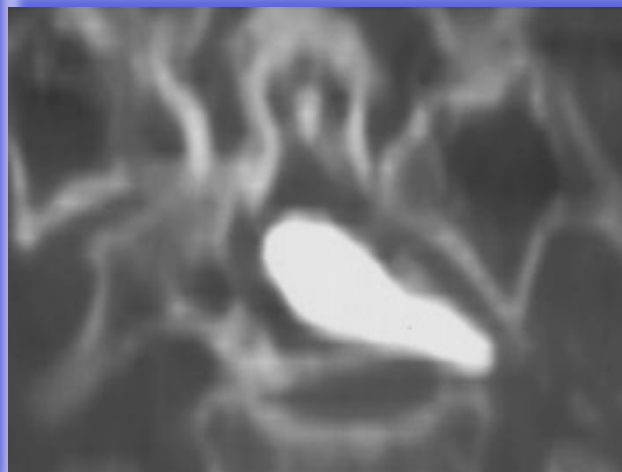
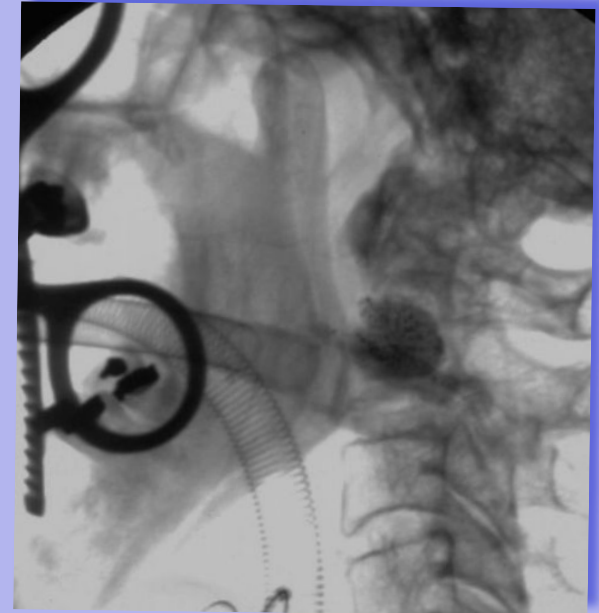
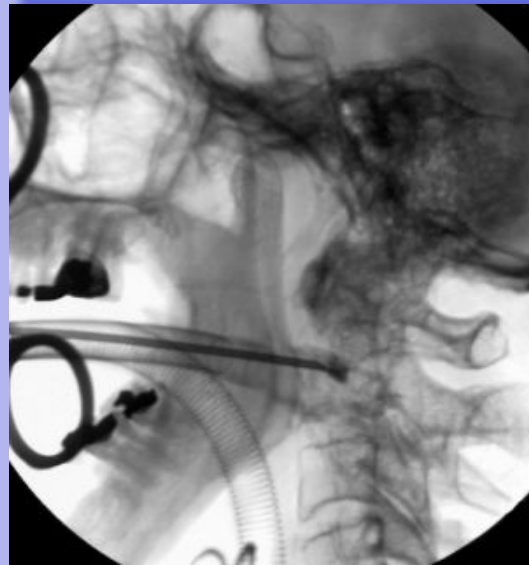
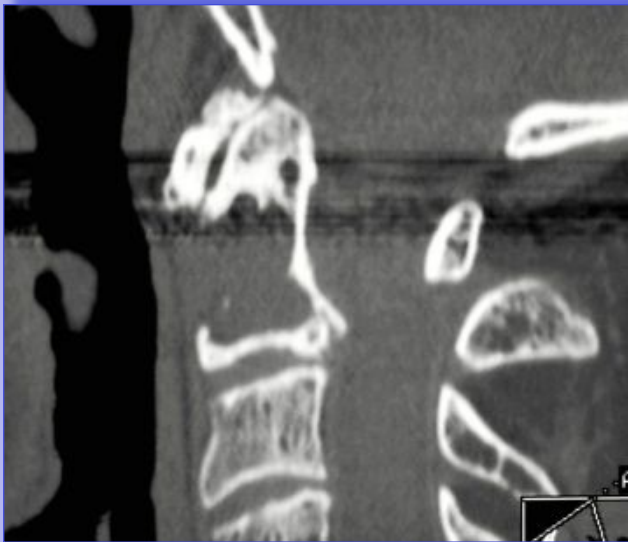


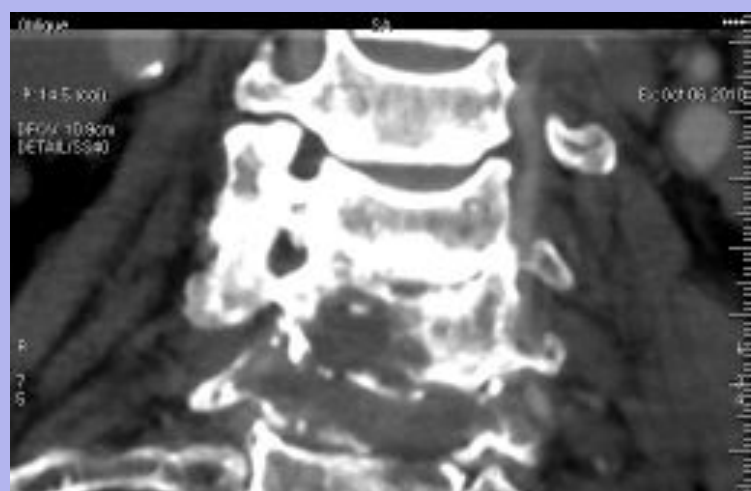
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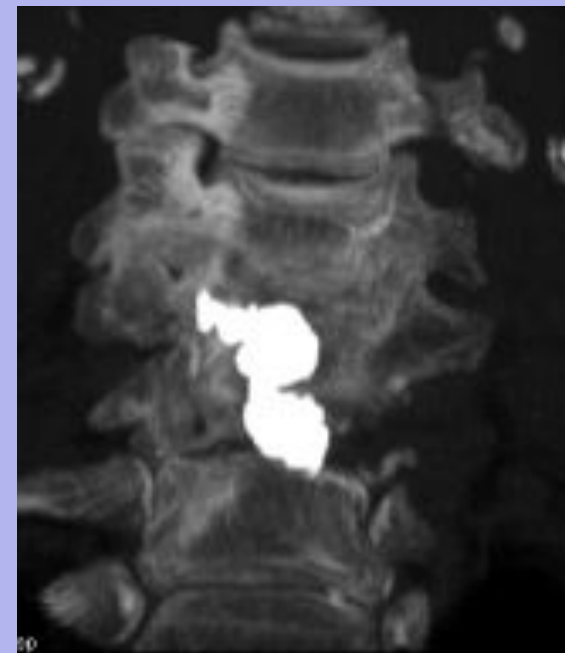
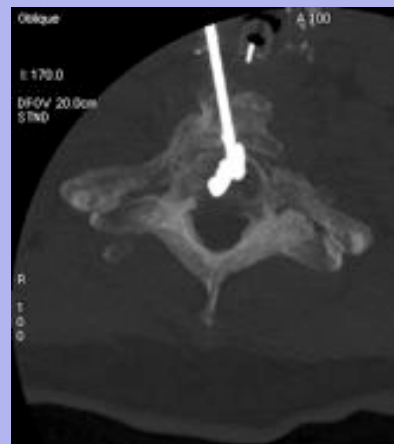
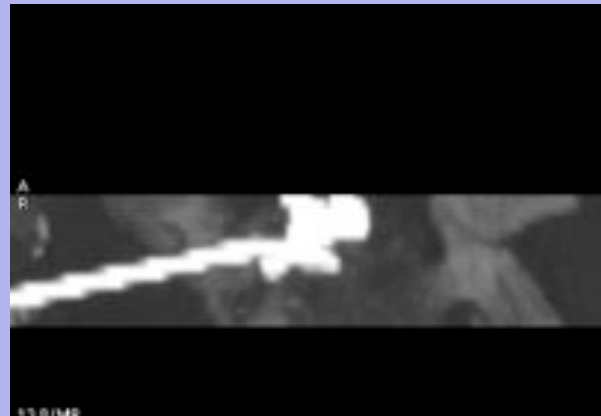
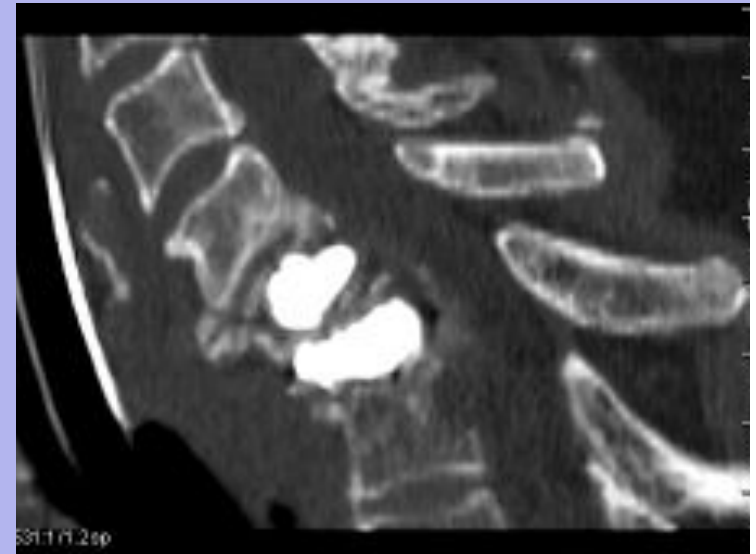
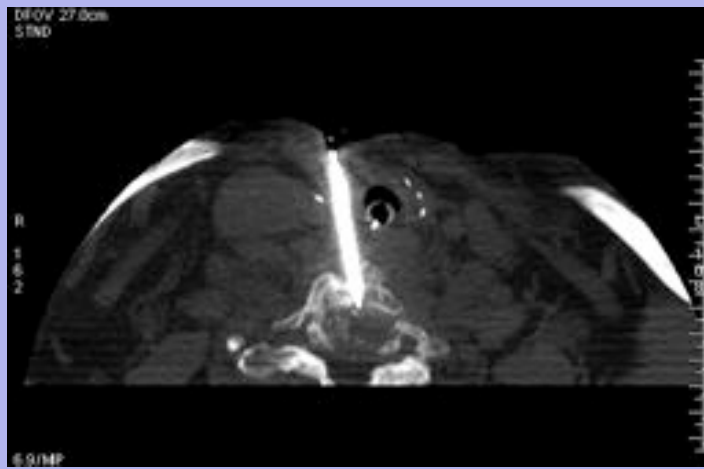


0670





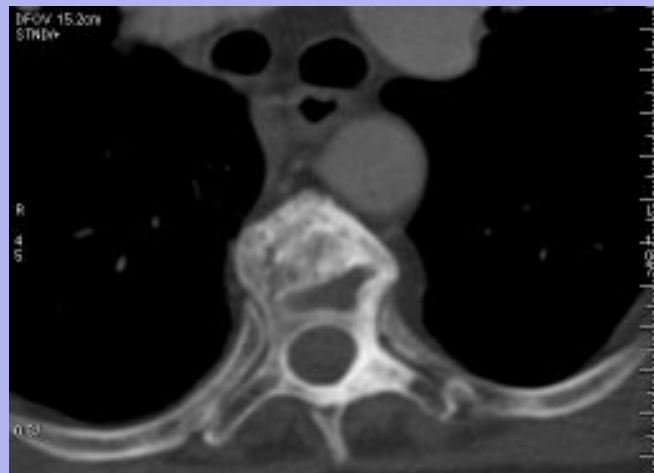




METASTASE MIXTE LYTIQUE ET CONDENSANTE

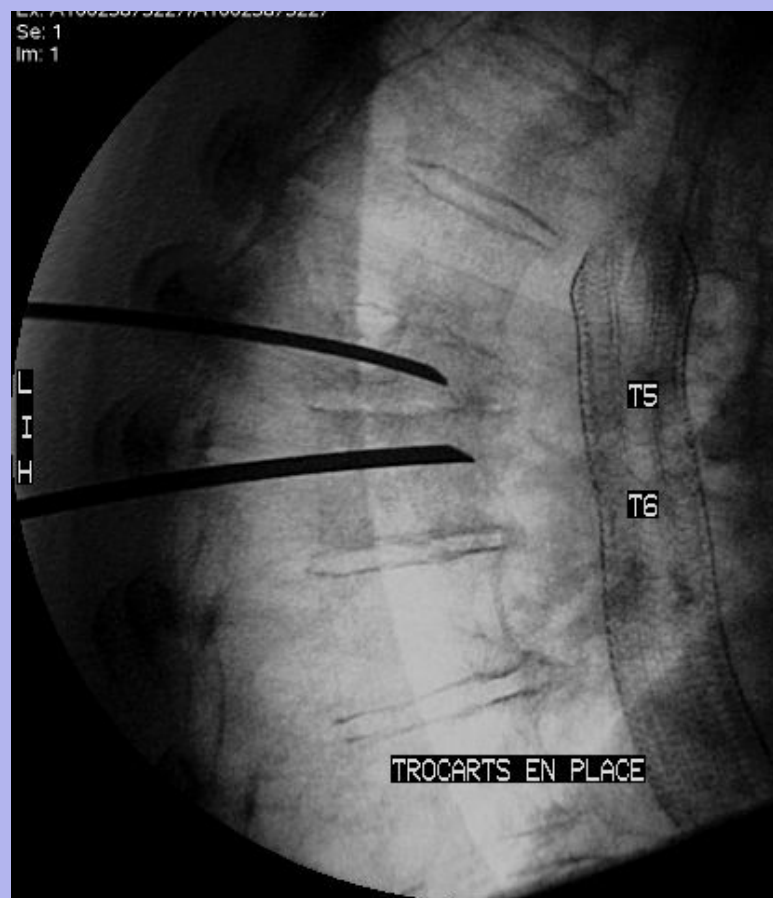
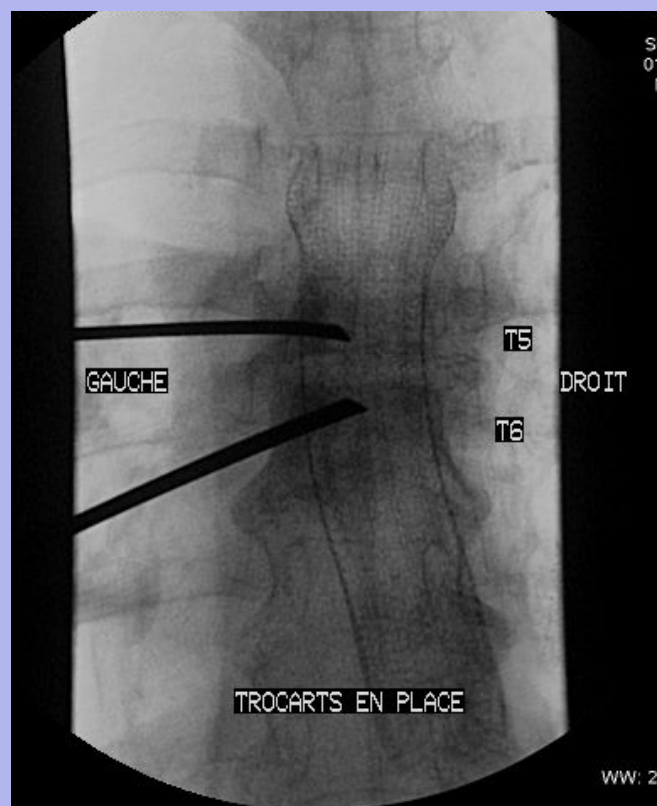


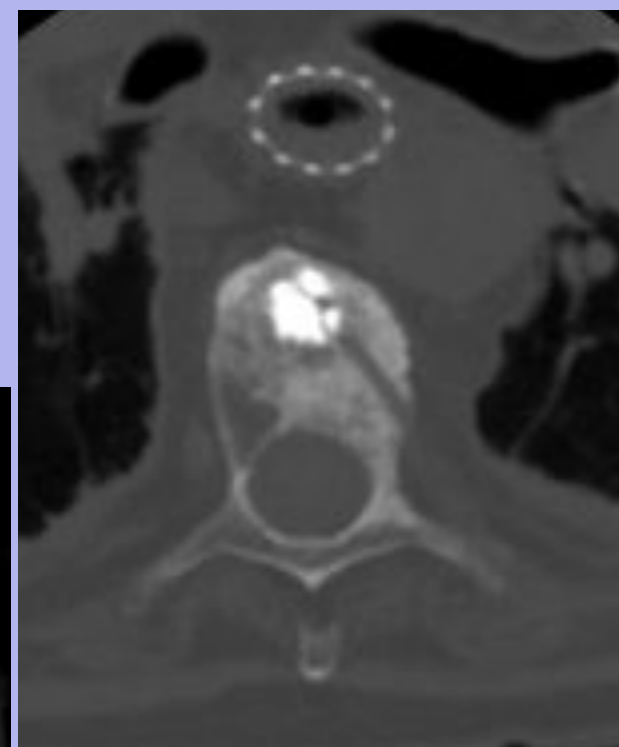
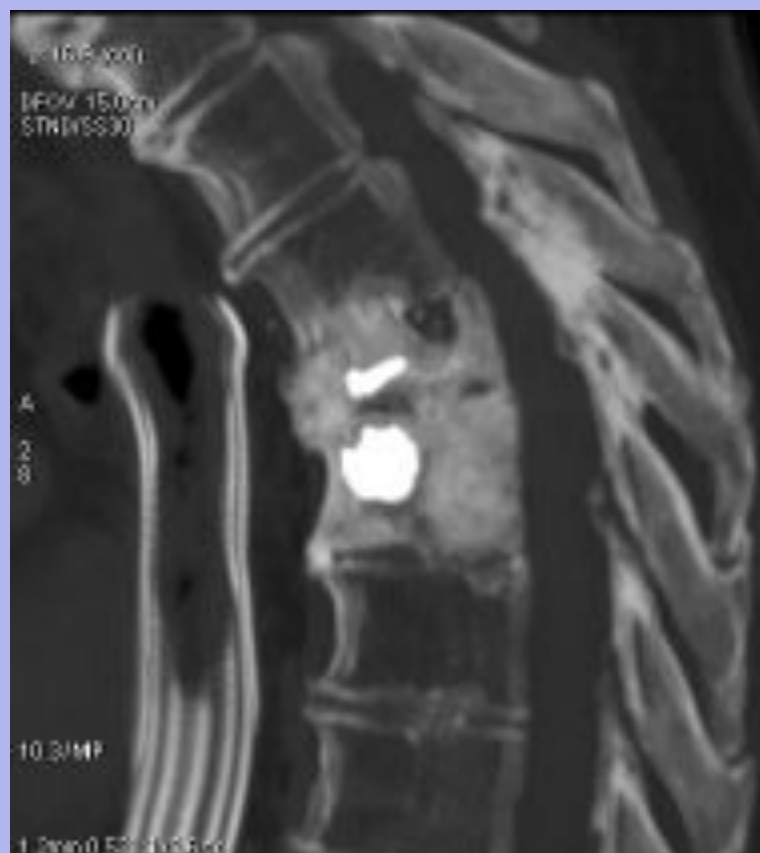
IRM



TDM







VERTEBROPLASTIE

- COMPLICATIONS:

- Risque infectieux

- Fuites du ciment

- Fuite postérieure

- injection sous scopie, ciment visqueux

- Fuite veineuse

- ciment visqueux après phlebogramme

- Fuite dans foramen

- infiltration si irritation

- Fuite dans disque adjacent

- asymptomatique

- Fuite péri vertébrale

- asymptomatique

- Effets secondaires:

- Réaction inflammatoire dans les heures suivantes ⇒ AINS

Notre expérience

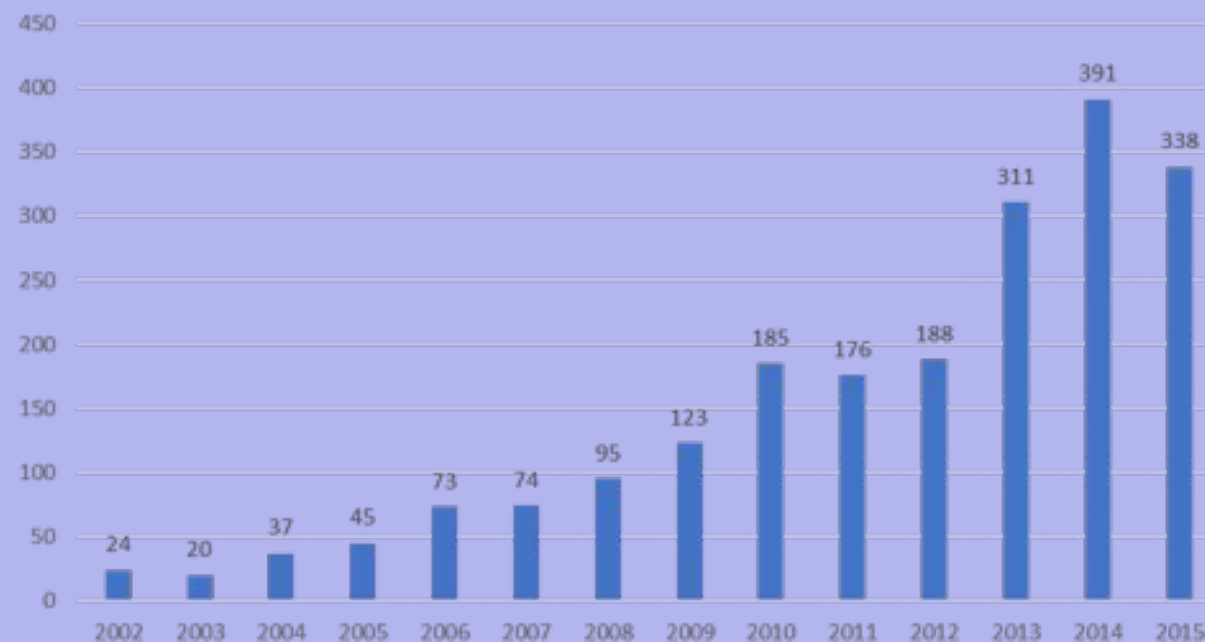
- **Vertebroplastie** 2300 patients depuis 1995
 - Mortalité nulle
 - Pas de complication infectieuse
 - Pas de complication neurologique

 - Fuite foraminale 2 → Infiltration
 - Fuite veineuse artère pulmonaire 1 → AVK 3mois

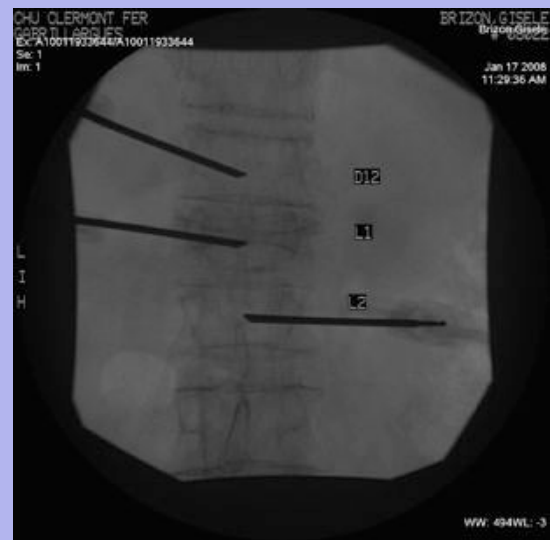
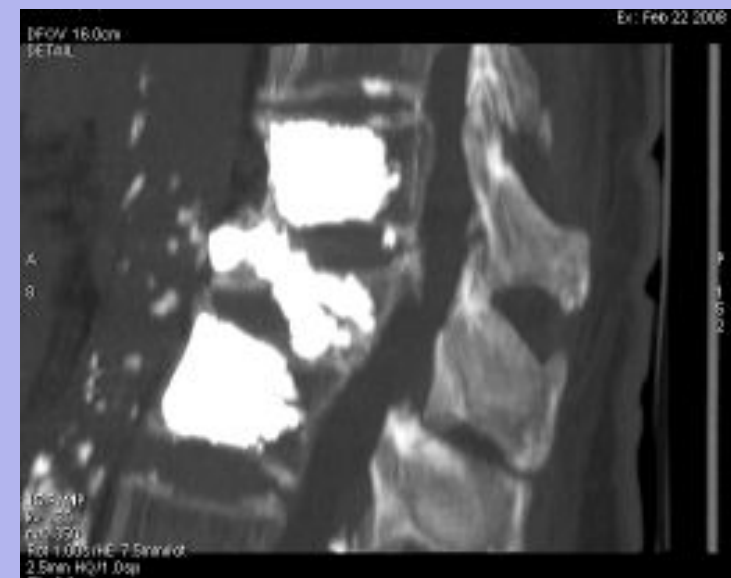
 - Tassement secondaire 8 cas
 - Hématome du psoas 3 cas (voie postero laterale)
 - Pneumothorax 2 cas debut experience

	2010	2011	2012	2013	2014	2015
actes d'interventionnel rachis	232	234	251	364	465	411
dont Vertébroplastie kyphoplastie	185	176	188	311	391	338
dont Biopsie	34	45	44	39	59	38
dont Thermocoagulation	13	13	17	14	15	35

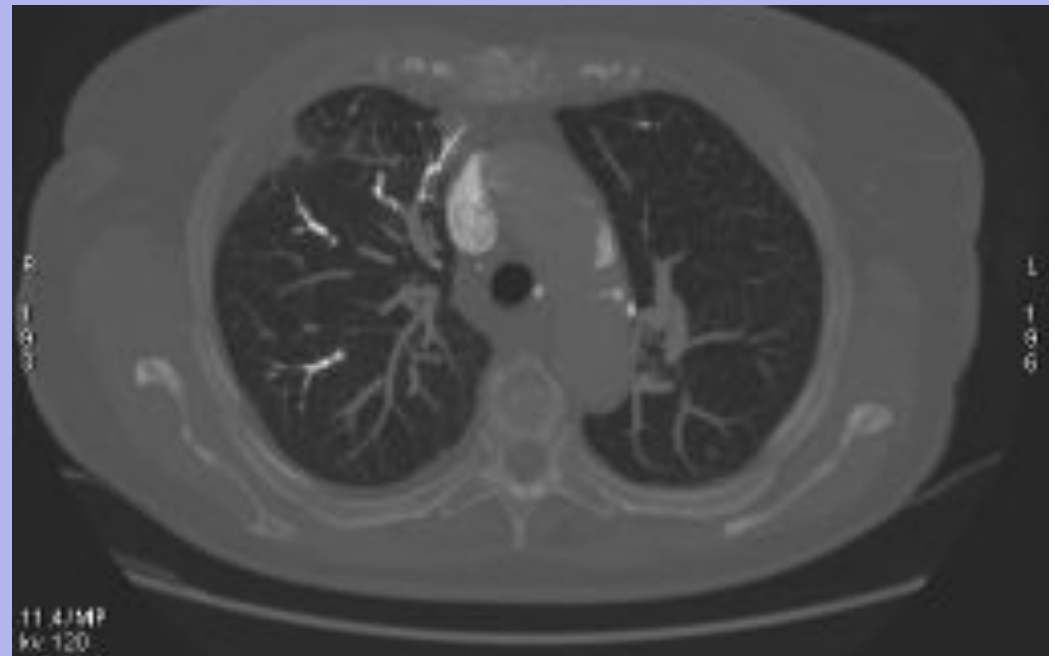
Nb vertébroplastie







4jours après ,douleur thoracique droite, crachat hemoptoique



Mise sous AVK durant 3mois, disparition des signes

Pulmonary cement embolism after percutaneous vertebroplasty: a rare and nonthrombotic cause of pulmonary embolism.

[Bonardel G](#), [Pouit B](#), [Gontier E](#), [Dutertre G](#), [Mantzarides M](#), [Goasguen O](#), [Foehrenbach H](#).

Nuclear Medicine Department, HIA Val de Grâce, Paris, France.

gerald.bonardel@free.fr

Percutaneous vertebroplasty consists of injection of acrylic cement - polymethylmethacrylate - into a vertebral body to obtain pain relief and increase its mechanical stability. The procedure is indicated for painful hemangiomas and for painful vertebral compression fractures due to osteoporosis or malignancy.

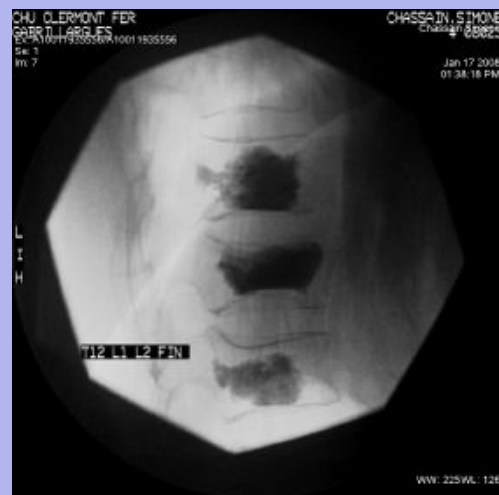
Although vertebroplasty is an efficient treatment, it is not free of complications.

We present the case of a patient with pulmonary cement embolism after percutaneous vertebroplasty. Because such patients may be completely asymptomatic, but may also present with acute and severe, cardiovascular instability, clinicians and nuclear physicians should be aware that pulmonary embolism of polymethylmethacrylate may occur after percutaneous vertebroplasty.

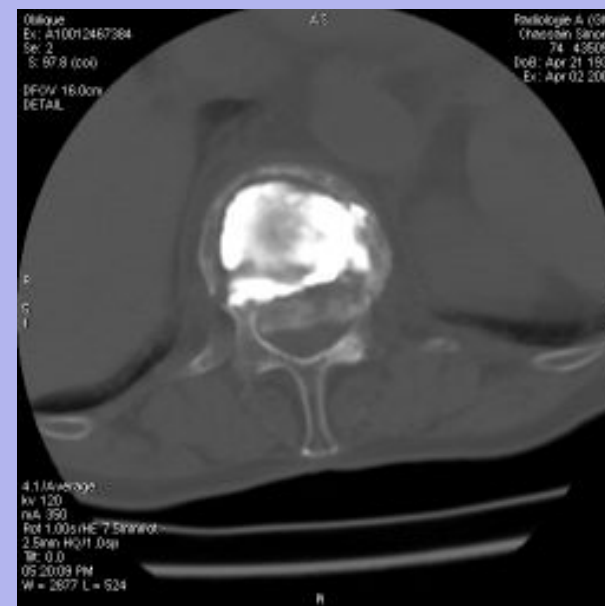
PMID: 17667431 [PubMed - indexed for MEDLINE]

Patiente de 75 ans, chute il y a 3 jours





3 mois après, douleur persistante





Refractures in cemented vertebrae after percutaneous vertebroplasty: a retrospective analysis.

[Lin WC](#), [Lee YC](#), [Lee CH](#), [Kuo YL](#), [Cheng YF](#), [Lui CC](#), [Cheng TT](#).

Department of Diagnostic Radiology, Chang Gung Memorial Hospital, Chang Gung University College of Medicine, 123 Ta-Pei Road, Niao-Sung Hsiang, Kaohsiung, 83305, Taiwan.

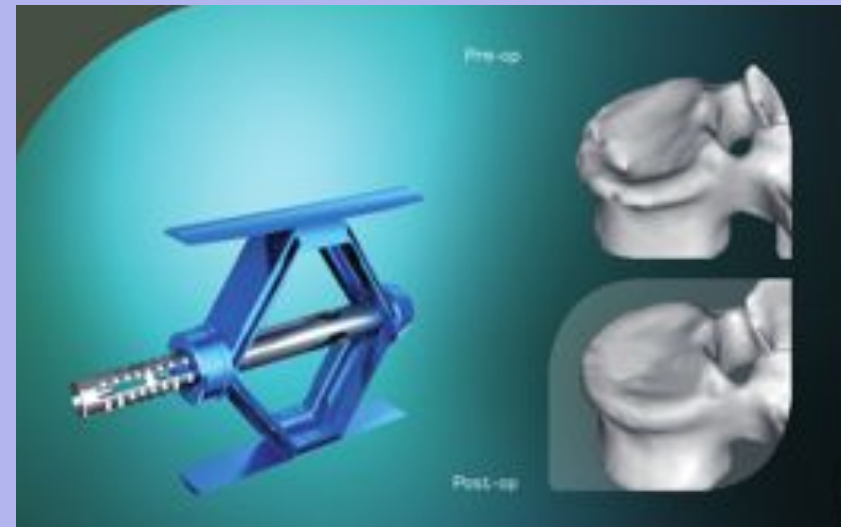
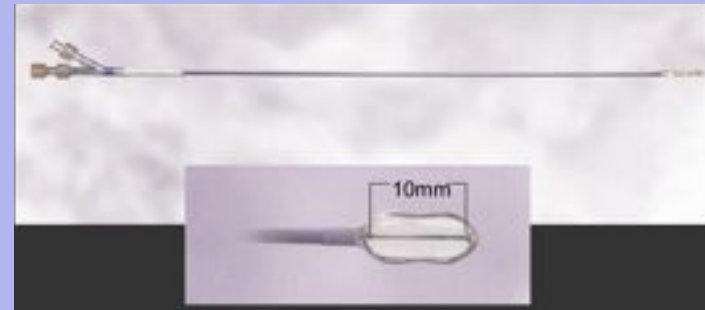
Percutaneous vertebroplasty is an efficient procedure to treat pain due to osteoporotic vertebral compression fractures. However, refracture of cemented vertebrae occurs occasionally after vertebroplasty. It is unclear whether such fractures are procedure-related or part of the natural course of osteoporosis. The effect of potentially important covariates on refracture risk in cemented vertebrae has not been evaluated previously. We retrospectively analyzed the incidence and possible causative mechanism of refracture in patients who had received only one vertebroplasty for a single level of vertebral compression fracture. We assessed the following covariates: age, sex, body weight, height, lumbar spine bone mineral density, treated vertebral level, pre-existing untreated vertebral compression fracture, and gas-containing vertebrae before treatment. Surgical variables, including surgical approach, cement injected, and anterior vertebral height restoration, were also analyzed. Anti-osteoporotic treatment after surgery was recorded. Multiple logistic regression analysis was used to determine the relative risk of refractures of cemented vertebrae. Overall, 98 patients were evaluated with a mean follow-up of 26.9 +/- 12.4 months (range, 7-55 months). We identified 62 refractures and the mean loss of anterior vertebral height was 13.3% (range 3.2-40.3%). The greater the anterior vertebral height obtained from vertebroplasty, the greater the risk of refracture occurring ($P < 0.01$). Gas-containing vertebrae were also prone to refracture after the procedure ($P = 0.01$). Anti-osteoporotic treatment was of borderline significance between refractured and non-refractured vertebrae ($P = 0.07$). Only restoration of anterior vertebral height was positively associated with refracture during the follow-ups ($P < 0.01$). In conclusion, refractures of cemented vertebrae after vertebroplasty occurred in 63% of osteoporotic patients. Significant anterior vertebral height restoration increases the risk of subsequent fracture in cemented vertebrae.



Hematome psoas

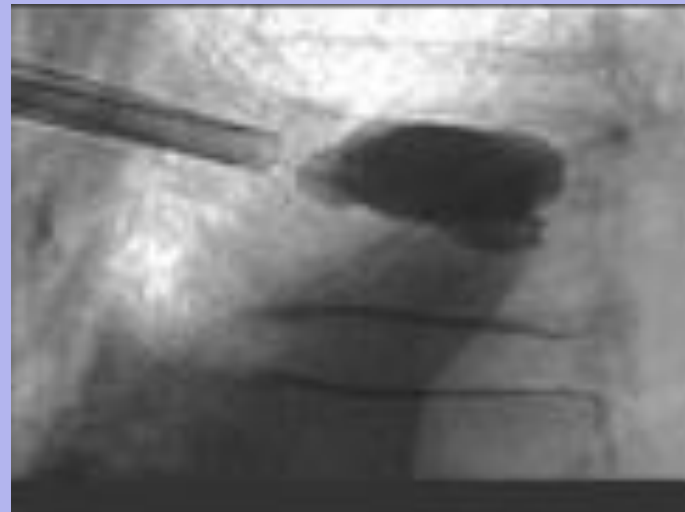
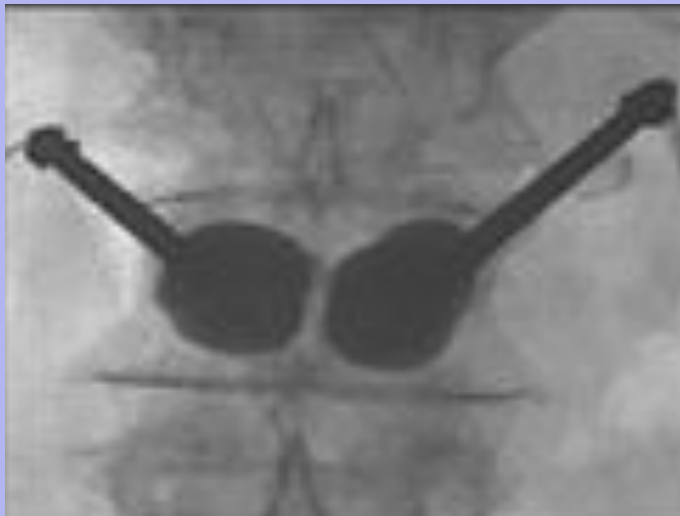
Kyphoplastie

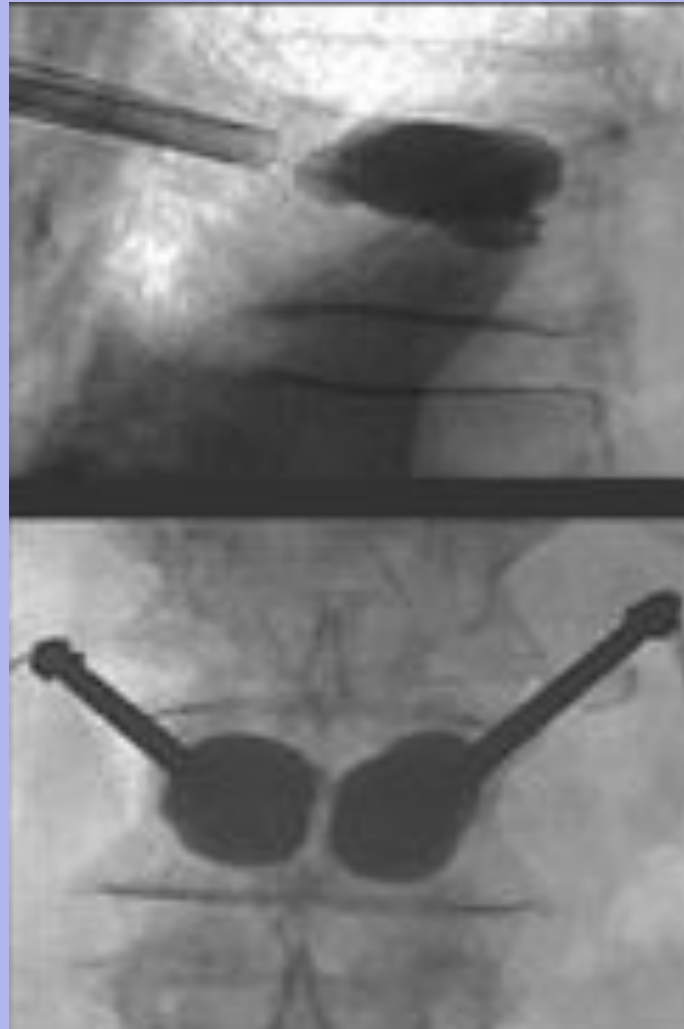
- Technique visant à restaurer une hauteur vertébrale sur un tassement à l'aide :
 - Ballon (Metronic)
 - Stent
 - Cric (Spine jack)

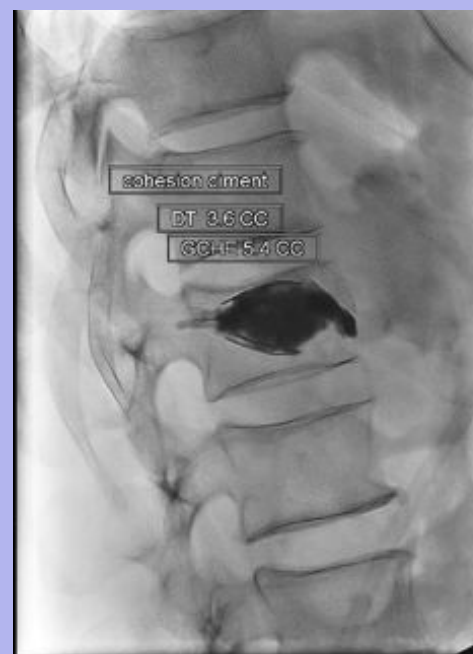
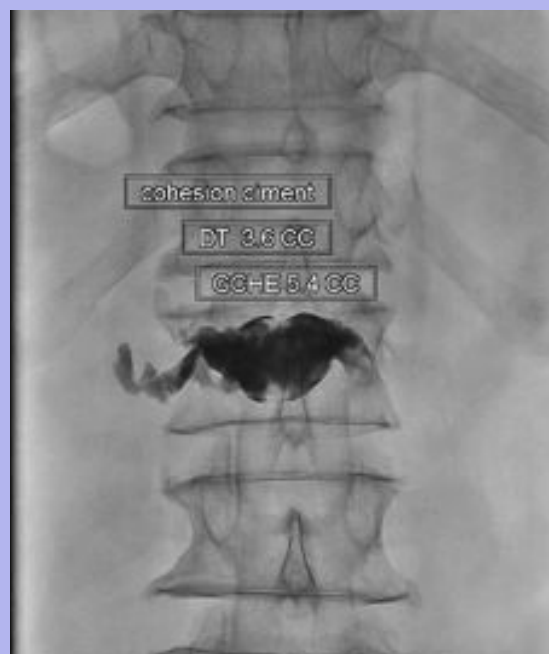


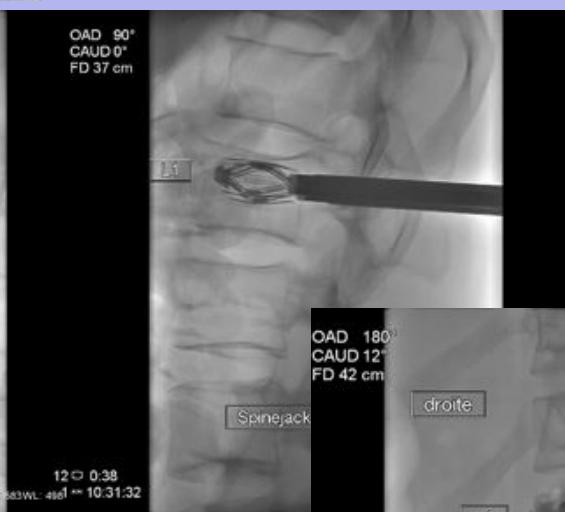
- Abord bilateral trans pediculaire
9F au lieu de 11F
gros pedicule
- **Tassement recent inferieur à 10J**

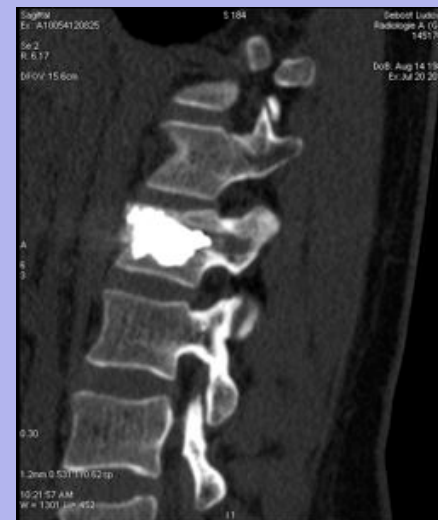
Cyphoplastie par ballonnet











VERTEBROPLASTIE

Soulage la douleur

Stabilise la fracture

Ne restaure pas la hauteur

Rapide moins invasif

Sujet âgé

CYPHOPLASTIE

Soulage la douleur

Stabilise la fracture

**Tend à restaurer la hauteur
(maximise l'avantage
clinique)**

Fracture récente

Fracture unique

Sujet jeune

Trauma

Intérêt kyphoplastie / vertebroplastie

- Restituer une hauteur vertebale superieure
- Fuite de ciment moindre?
- Effet sur douleur immediate identique
- Effet sur douleur long terme non demontré
- Problème de coût 400 € versus 4000€

An aerial photograph of a volcanic landscape. In the foreground, a large, circular, grassy crater is visible, surrounded by dense green forest. In the background, a large, conical volcano rises above a layer of white clouds. The sky is blue with some light clouds. The text "merci de votre attention" is overlaid on the image, tilted diagonally.

merci de votre attention