

Percutaneous Disk Aspiration & Biopsy (PDAB)

Spontaneously occurring infection of the intervertebral disk space typically manifest with nonspecific symptoms of discomfort with a slow or insidious onset that may be difficult to distinguish from neck or back pain due to other causes. Most of these patients are older than 50 years and may have other painful back conditions. Several weeks or months may pass before the diagnosis is suspected, and further delays may occur until specific antibiotic treatment is begun. Even when the diagnosis of infectious diskitis is established by means of diagnostic imaging, a specific microbiologic diagnosis is highly desirable for definitive medical treatment with the antibiotics to which the pathogens are sensitive. Microbiologic and histopathologic analyses are often associated to establish a definitive diagnosis. In such cases, percutaneous disk aspiration and biopsy has become a routine procedure.

1) Indications

Indications of percutaneous disk aspiration & biopsy

Needle aspiration or core biopsy techniques using small- or large caliber needles can be used to obtain disk material. Percutaneous disk aspiration is performed whenever microbiologic or cytopathologic analysis is required for diagnosis or treatment. If possible, Disk aspiration/biopsy should be performed prior to antibiotic treatment.

The major indications are the following:

- Septic diskitis.
- Spinal tuberculosis.

2) Contraindications

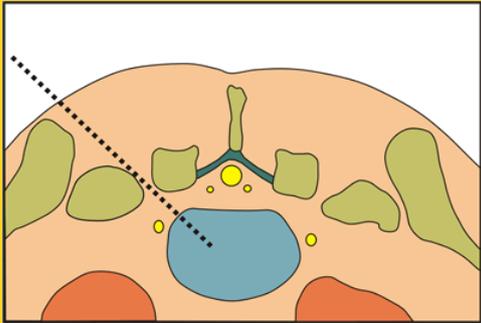
Contraindications of percutaneous disk aspiration & biopsy

The only contraindication is:

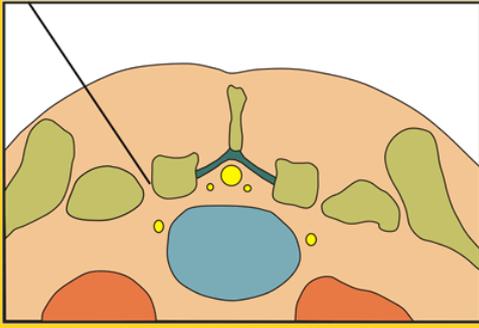
- Bleeding diatheses

Even in this case, a fine needle aspiration is not an absolute contraindication.

3) Technique

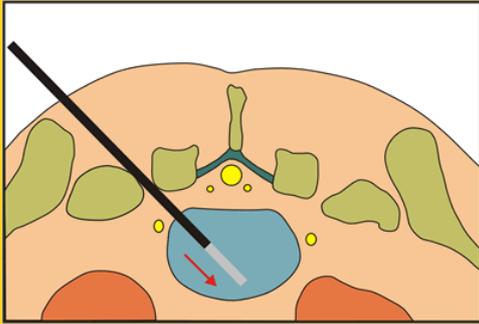
Biopsy and aspiration of the disk : Procedure description		
1		Placement
2		Materials
3		Dual guidance

4



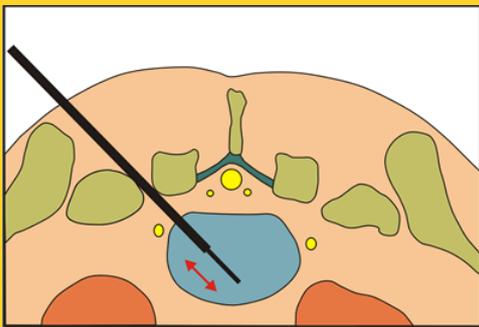
Local anesthesia

5



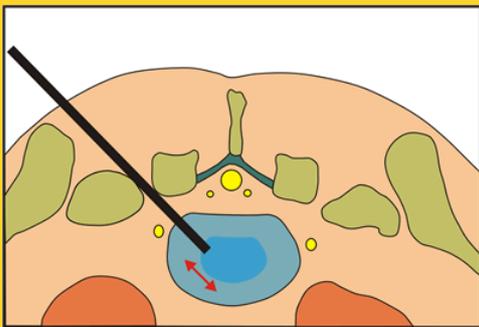
Disk sampling with biopsy gun

6



Coaxial aspiration

7



Aspiration biopsy

4) Complications

Complications of disk biopsy are rare. Possible and reported complications are:

- The major complication is diskitis. To avoid this complication, severe sterility during the intervention is mandatory.
- Hematoma
- Neural and vascular injuries.
- Pneumothorax

Murphy et al, in a large review of 9500 percutaneous skeletal biopsies, identified 22 complications (0.2%). They reported 9 pneumothoraxes, 3 cases of meningitis, 5 spinal cord injuries. Serious neurological injury occurred in 0.08% of procedures. Death occurred in 0.02%. Only two complications were observed among our 180 disk aspirations in our department. These consisted of paravertebral hematomas which resolved spontaneously.

5) Results

CT- and/or fluoroscopic- guided percutaneous needle aspiration is an accurate method for identifying active bacterial disk space infections but is less reliable for identifying fungal infections.

Chew et al. reported in a retrospective study performed to evaluate 105 consecutive CT-guided percutaneous disk space aspiration procedures in 92 patients suspected of having spontaneous (non-postoperative) infectious diskitis: Microbiologic analysis of the CT-guided percutaneous aspiration specimens was positive in 39 of 43 cases proved to have active infections, with four false-negative and no false-positive cases. Sensitivity was 91%; specificity was 100%. The false-negative cases were all active fungal infections identified from surgical specimens. Adding cytopathologic analysis to microbiologic analysis improved sensitivity but reduced specificity. The most common pathogens were species of Staphylococcus, Streptococcus, Candida, and Mycobacterium. All 30 active bacterial infections were identified with the CT-guided procedures, but only five of nine fungal infections were identified.

6) Cases

Disk Aspiration & Biopsy

Case 1: Diskitis, diskal biopsy with a 14-gauge bone biopsy needle.



Fig. 1: Diskal biopsy, CT control.



Fig. 2: Diskal aspiration/biopsy under fluoroscopic control.

Case 2: Spinal tuberculosis.



Fig. 3: T2 SE weighted image. Narrowing of disk space and vertebral collapse. Displacement and compression of the thecal sac and spinal cord. Anterior and lateral paraspinal abscesses at the affected level.



Fig. 4: Drainage of anterior and lateral paraspinal abscesses .

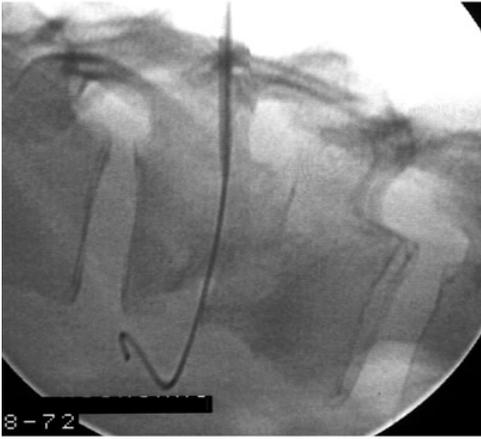


Fig. 5: Drainage of anterior and lateral paraspinal abscesses.

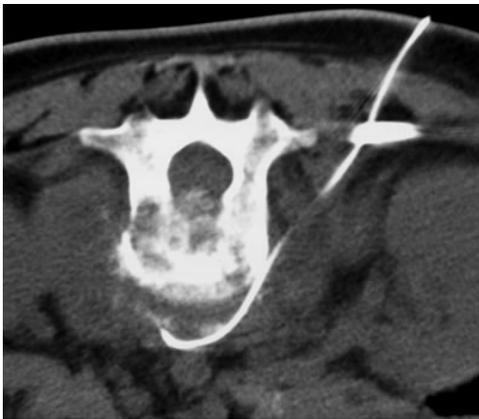


Fig. 6: Drainage of anterior and lateral paraspinal abscesses.