

# Methods to Extract the Materials Trapped in the Needle Hub during Fine Needle Aspiration Cytology Technique

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## ABSTRACT

The incidence of getting an unsatisfactory smear while performing fine needle aspiration cytology is high when performed with the needle alone and when only limited material is obtained during the procedure. This reflects in the adequacy of material obtained and also creates confusion for the reporting cytopathologist. A major problem arises when most of the material that is obtained during a needle biopsy is trapped within the needle hub. This invasive procedure is generally done by the surgical pathologist, and it involves great skills and techniques to perform and also obtain adequate material from the hub of the needle. The material obtained during the procedure plays a vital role in obtaining a satisfactory smear and reduces the confusion during reporting. Thus, to obtain the material from the needle hub that is trapped, certain methods can be followed so that it helps in obtaining adequate material as well as reduces the needle passes given to the patient during the procedure.

**Keywords:** Fine needle aspiration cytology, Material trapped in needle hub, Unsatisfactory smear.

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## INTRODUCTION

Fine needle aspiration cytology is an invasive procedure that is widely used in the diagnosis of any visible and palpable swelling on the skin surface. The hidden and deeper parenchymal swellings that are not readily accessible or visible can be approached by the guidance of ultrasonography or computed tomography.

## LIMITATIONS OF FINE NEEDLE ASPIRATION PROCEDURE

Fine needle aspiration cytology is a routine diagnostic procedure that is widely used in the diagnosis of swellings that are inflammatory, benign, or malignant. Fine needle aspiration technique mainly depends on the nature of the swellings; for example, in the case of thyroid swellings or other vascular swellings, aspiration has to be done by only using the needle, without a negative suction by the syringe, and the material gets collected only in the needle hub, which is then transferred to the slides. In many instances, the material gets stuck to the needle hub itself. In this procedure, the adequacy of the material is the most important parameter to proceed with the staining and reporting.<sup>1,2</sup> If the material is not adequately obtained,<sup>3,4</sup> it results in smears that are unsatisfactory samples for reporting.<sup>5</sup>

## TECHNIQUES TO EXTRACT THE MATERIAL FROM THE NEEDLE HUB

The material that was collected and stuck in the needle hub can be obtained by aspirating a small amount of alcohol that is used as a fixative, and it is transferred back to the slide with great pressure. To perform fine needle aspiration on the swellings that are highly vascular, the needle with the hub of the syringe is detached and is used for the extraction of the sample. In that case to transfer the material from the needle hub to the glass slide, the needle with hub is attached back to the barrel of the syringe, and with the help of the plunger, force is applied to transfer the material to

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the slides. This technique may retain most of the material inside the needle hub itself. To obtain that retained material from the needle hub, another syringe is used to aspirate it and transfer it to the slides. Since the material in the needle hub can get clotted or dried up, the same syringe can be used to transfer the retained material to the slides by aspirating 0.1–0.2 mL of the alcohol fixative into the syringe, and by giving high pressure using the plunger, the material along with the alcohol is transferred to the glass slide. This technique can help in recovering the retained material from the needle hub.

Another technique that can be performed in the extraction of the material from the needle hub is by inserting the needle to the rubber plunger seal that is seen on the tip of the plunger. This needle once inserted into the plunger is placed on a table and the needle is secured with a finger and then with the help of the index finger, the hub is lifted and dropped so that the material from the hub is transferred into the slide. This material is then smeared onto the glass slide. Needlestick injury is common if the needle is not properly secured with a finger while performing this procedure, so

to avoid needle stick injuries, it is better to practice this procedure before performing it in a real case scenario.

## CONCLUSION

In fine needle aspiration cytology, the trapped material in the hub must be extracted as it helps to obtain adequate material for reporting and minimize the needle passes that have to be done for the patient during the procedure.

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