SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST,PONDICHERRY - 605003

Date 13.6.2019

From
Dr. PAMMY SINHA ,
HOD
Pathology
SriLakshmiNarayanaInstituteofMedicalSciences,Puducherry
Bharath Institute of Higher Education and Research,
Chennai.

To
The Dean,
SriLakshmiNarayanaInstituteofMedicalSciences,Puducherry
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Permission to conduct value-added course: FNAC techniques and staining

Dear Madam,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: FNAC techniques and staining on JULY- SEP 2019. We solicit your kind permission for the same.

Kind Regard

Dr. PAMMY SINHA

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. JAYALAKSHMI

The HOD: Dr. PAMMY SINHA

The Expert: Dr. A.Manoharan

The committee has discussed about the course and is approved.

Dean	Subject Expert	HOD
(Sign &Seal)	(Sign &Seal)	(Sign &Seal)

Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.,
DEAN
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Ageram Kudapakkam, Post,
Villanur Commune Puducherry 605 502.

Reg. No. 34324
Assistant Professor Department of Pathology
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Kudapakkam, Puducherry 605 502

PROFESSOR & HEAD DEPT OF PATHOLOGY
SRI LAKSHMI NARAYAN INSTITUTE OF
MEDICAL SCIENCES,
PUDUCHERRY - 605 502.

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST,PONDICHERRY - 605003

Circular

16.6.19

Sub: Organising Value-added Course: FNAC TECHNIQUES AND STAINING

With reference to the above mentioned subject, it is to bring to your notice that **SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES Bharath Institute of Higher Education and Research**, is organising"__FNAC TECHNIQUES AND STAINING_____". The course content [illegible] form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before30.6.2019 . Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Dr. G. JAYALAKSHMI, BSC.,MBBS.,DTCD.,M.D.,
DEAN
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Ageram Kudapakkam, Post,
Villanur Commune Puducherry-605 502.

Course Proposal

Course Title:FNAC techniques and staining

CourseObjective:

1. To define fine needle aspiration cytology and shall be able to discuss the principle and procedure of FNAC
2. Should know about the procedure of FNAC and its staining procedure
3. Should be able to perform the staining of FNAC slides and should also to know about the trouble shooting

CourseOutcome: Should know about the FNAC in detail
Course Audience: IInd year MBBS
Course Coordinator: Dr.A.Manoharan
Course Faculties with Qualification and Designation:

1.Dr.A.Manoharan Assistant professor
2.DR. J.PRIYADHARISINI
3. DR.SIVAGANESH@PORKO.G

Course Curriculum/Topics with schedule (Min of 30 hours)

SlNo	Date	Topic	Faculty	Time	Hours
1.	6.07.2019	Definition of FNAC and informed consent	Dr. A.MANOHARAN	1.30-4 pm	2.5 hrs
2.	13.07.2019	Location of FNAC	DR. J.PRIYADHARISINI	1.30-4 pm	2.5 hrs
3.	20.07.2019	Types of FNAC; Inpatient and Image guided	DR.SIVAGANESH@PORKO.G	1.30-4 pm	2.5 hrs
4.	27.07.2019	Conventional preparations	Dr. A.MANOHARAN	1.30-4 pm	2.5 hrs
5.	3.08.2019	Liquid based preparations	DR. J.PRIYADHARISINI	1.30-4 pm	2.5 hrs

6.	10.08.2019	Cell block preparation	DR.SIVAGANESH@PORKO.G	1.30-4 pm	2.5 hrs
7.	17.08.2019	Fixation techniques	Dr. A.MANOHARAN	1.30-4 pm	2.5 hrs
8.	24.08.2019	Pap staining and romanowsky staining	DR. J.PRIYADHARISINI	1.30-4 pm	2.5 hrs
		Practical Class	DR.SIVAGANESH@PORKO.G		
9.	31.08.2019	Hands on training of fixative procedures	Dr. A.MANOHARAN	1.30-4 pm	2.5 hrs
10.	7.09.2019	Pap staining	DR. J.PRIYADHARISINI	1.30-4 pm	2.5 hrs
11.	14.09.2019	Romnawsky staining	DR.SIVAGANESH@PORKO.G	1.30-4 pm	2.5 hrs
12	21.09.2019	Assesment and giving feed back	Dr. A.MANOHARAN	1.30-4 pm	2.5 hrs
		Total			30 hrs

REFERENCE BOOKS:

1. OrellAndSterrett's Fine Needle Aspiration Cytology By SvanteR.Orell
2. Koss Diagnostic Cytology And Its Histopathologic Basics By Leopold.G.Koss

COURSE DETAILS

Particulars	Description
Course Title	FNAC PROCEDURE AND STAINING
Course Code	PA11
Objective	1. INFORMED CONSENT 2. LOCATION OF FNAC 3. ASPIRATION TECHNIQUES 4. SLIDE PREPARATION 5. FIXATION TECHNIQUES 6. STAINING METHODS
Further learning opportunities	Ancillary techniques and molecular markers in cytology
Key Competencies	On successful completion of the course the students will have knowledge in the techniques of FNAC
Target Student	2NDMBBS Students
Duration	30hrs JULY- SEP 2019
Theory Session	20hrs
Practical Session	10hrs
Assessment Procedure	SHORT ANSWERS

VALUE ADDED COURSE

1. **Name of the programme& Code**

   FNAC techniques and staining PA11

2. **Duration& Period**

   30 hrsJuly – September 2019

3. **Information Brochure and Course Content of Value Added Courses**

   Enclosed as Annexure- I

4. **List of students enrolled**

   Enclosed as Annexure- II

5. **Assessment procedures:**

   Short notes questions- *Enclosed as Annexure- III*

6. **Certificate model**

   Enclosed as Annexure- IV

7. **No. of times offered during the same year**:

   1 TIME (JULY - SEPTEMBER 2019)

8. **Year of discontinuation: 2019**

9. **Summary report of each program year-wise**

Value Added Course- JULY - SEPTEMBER 2019					
Sl. No	**Course Code**	**Course Name**	**Resource Persons**	**Target Students**	**Strength& Year**
1	PA11	FNAC techniques and staining	Dr. A.Manoharan	IInd MBBS	July – September 2019

10. **Course Feed Back**

Enclosed as Annexure- V

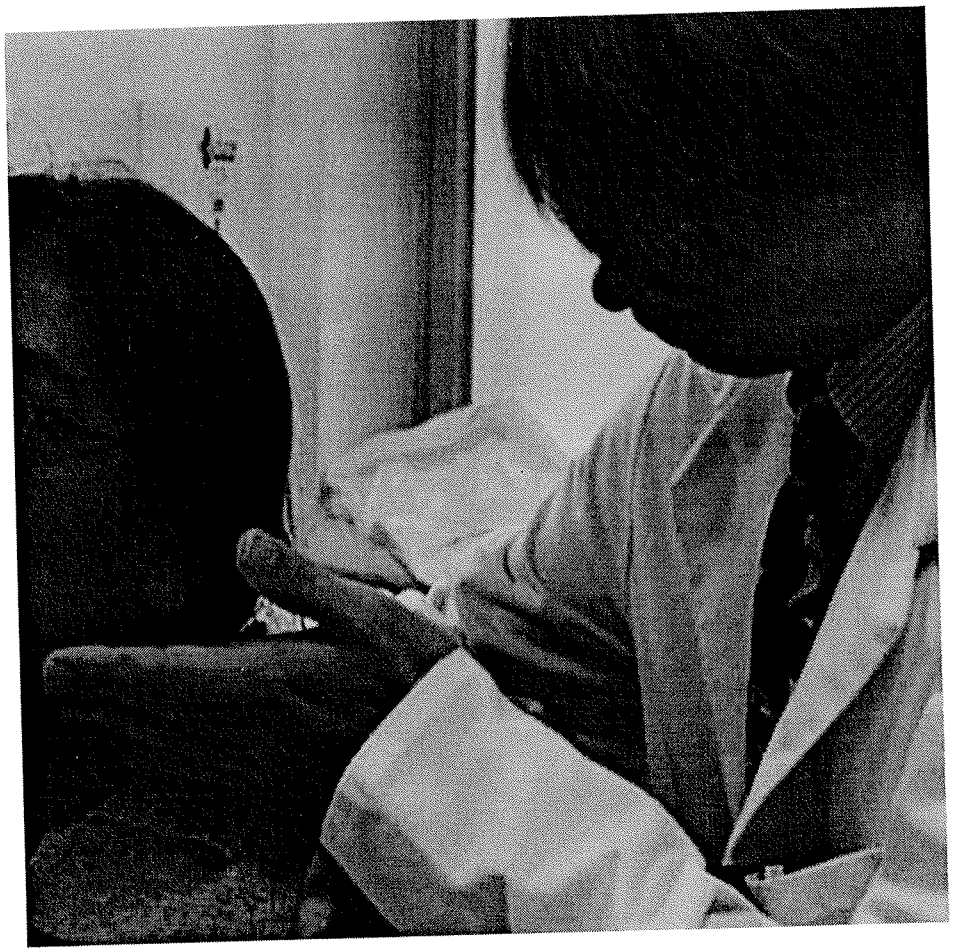
RESOURCE PERSON

Reg. No. 95555
Assistant Professor Department of Pathology
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Kudapakkam, Puducherry-605 502.

COORDINATOR

PROFESSOR & HEAD, DEPT. OF PATHOLOGY
SRI LAKSHMI NARAYAN INSTITUTE OF
MEDICAL SCIENCES,
PUDUCHERRY 605 502.

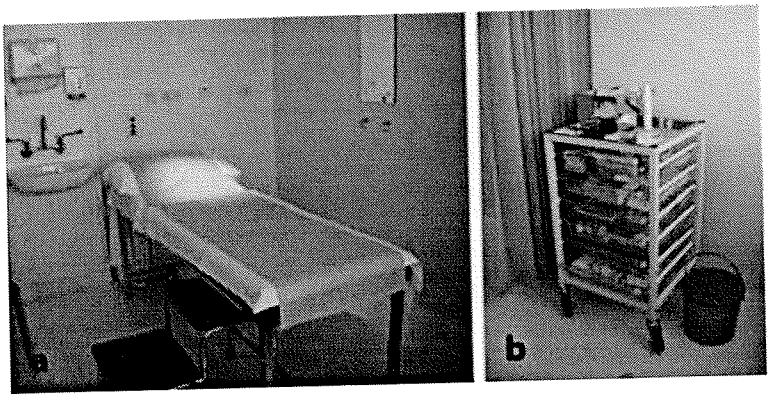
FNAC TECHNIQUES AND STAINING



PARTICIPANT HAND BOOK

centuries. The patient, after being explained the procedure, its format, purpose, risks, benefits and the alternative approach, makes a voluntary and informed decision to proceed. The modern concept of informed consent is a process of mutual communication rather than a signature on a standardised form The idea of modern informed consent dates back to 1914 when a judicial ruling stated: "Every human being of adult years and sound mind has a right to determine what shall be done with his body. Further legal developments included emphasis on the information given to the patient in order for a decision to be truly informed rather than just consented to. The patient should be allowed the opportunity to ask questions and the doctor should be satisfied that the patient understands what they are signing. Although there are different legal interpretations as to who has a duty to inform, it is generally accepted that the duty to inform lies with the person who performs the procedure. A consent form usually has two parts, the first part explaining the procedure and the second underlining the risks. Both need to be read and understood by the patient prior to the procedure [5]. It has been shown that twice as many patients read the information leaflet explaining the commencement of procedure when information is disseminated in advance rather than on the day of the procedure . It is sug-gested that the consent forms should be written in simple terms, using larger print and in duplicate copy. Patients should be given copies of the consent forms they sign so that they can reread them at home. For true patient autonomy to exist in informed consent, patients should be given the form in a language they understand or else be provided with a competent interpreter

LOCATION OF FNAC



One of the advantages of FNAC is that it can be performed at various locations. Most frequently it is performed in the hospital outpatients department, but it can also be performed in hospital wards, in a dedicated room within a pathology laboratory or in imaging or endoscopy suites

Inpatient FNAC

Inpatients have their FNAC samples taken in hospital wards. Ward staff usually have very little experience of what is needed, so it is useful to advise them in advance as to what the procedure entails and what equipment is needed, making sure that the patient is present on the ward at the time the FNAC is planned for. In some cases, a nurse may be asked to assist with the FNAC procedure.

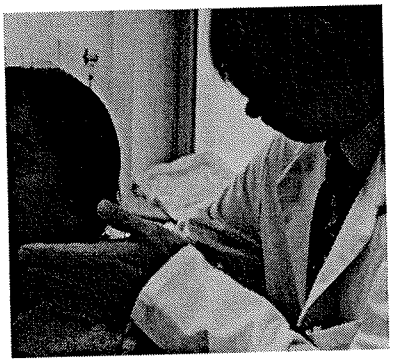


Image-Guided and Other FNAC

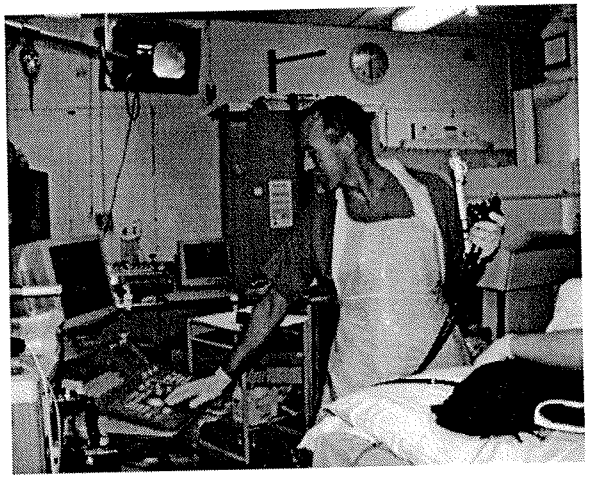
Ultrasound-Guided FNAC

Ultrasound-guided FNAC is practiced in some centres. This is the preferred method in some centres and is particularly useful in the staging of head and neck lesions, non-palpable breast lesions and thyroid lesions, in the case of the latter by helping to avoid surgery in 37% of cases . FNAC is performed either by a radiologist with or without the presence of a cytopathologist, or by a cytopathologist who has acquired ultrasonographic skills. The room is usually dark and there may be twice as many staff involved as when performing a non-image-guided FNAC. Unless this is performed by a well-trained team, an overlap of activity may occur. Image-guided FNAC is particularly advantageous in cases of small, non-palpable or multiple lesions.

Endoscopy-Guided

Ultrasound FNAC

The use of endoscopy-guided ultrasound (EUS) FNAC (EUS-FNAC) of the pancreas, mediastinum, duodenum, bile ducts, hypopharynx, rectum, lung and other sites accessible through the endoscope is increasing



Computed Tomography

(CT)-Guided FNAC

CT-guided FNAC is associated with high diagnostic accuracy and a low rate of complications, particularly in the diagnosis of pulmonary lesions.It has been shown

that an accurate diagnosis from FNAC of intrathoracic cancer is more likely when a cytopathologist is present than when not present during the procedure

Other FNAC Procedure

Locations

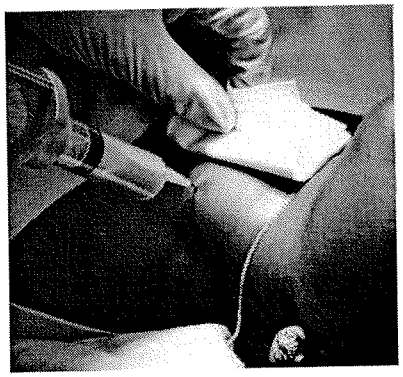
FNAC can be performed almost anywhere, provided the aforementioned conditions are met. As a first-line investigation, FNAC should have a place in primary care practices and hospital diagnostic units. This would introduce a means of triage for patients with lumps and bumps that would otherwise need specialist referral.

Suction FNAC

In this method, the needle is passed into the lesion and negative pressure is applied, usually by virtue of a syringe attached to the needle, and often with the help of a syringe holder (Cameco). In image-guided FNAC, most of the apparatus is designed to obtain material with the aid of negative- pressure suction. This method is particularly useful when draining a liquid from the lesion.

However, it is important that the negative pressure is released prior to exiting the lesion. If this is forgotten, after exiting the lesion the material from the needle may be accidentally aspirated into the syringe and it becomes more difficult to expel it in the traditional manner. In this case, making a cell solution would salvage the material. If, however, negative pressure is appropriately released before exiting the lesion, the cellular material is contained within the needle and its hub. The needle is then detached from the syringe and the material expelled onto a glass slide (or into a solution if an LBC sample is being made).

FNAC technique with suction applied is useful for draining abscesses or cysts.



The Capillary Method

In the past decade, FNAC has been performed increasingly without the aid of suction, with a needle alone, the so-called fine needle capillary (FNC) technique or non-aspiration aspiration . The needle is passed into the lesion and multiple fast jabbing movements in and out of the lesion as well as in different directions are performed. Once the material is seen in the hub of the needle, there is usually sufficient material.

Conventional Preparations

Material obtained with a fine needle is expelled onto appropriately labelled glass slides. This is usually performed by using a 20-ml syringe filled with air, attaching the needle to it and pushing the contents out of the needle. Sometimes, if the hub of the needle is full, it is possible to tap the hub against the glass and obtain the material directly from there. In this case, caution is needed to avoid needle-stick injury. The needle is discarded immediately into a special sharps container before spreading the material onto the slides.

The expelled material is ideally spread over several slides in small amounts rather than deposited in one large pool on a single slide. This way it is easier to obtain a thin-layer preparation that will be uniformly fixed or dried and will stain evenly throughout. Large amounts of blood are to be avoided because it clots, fibrin

trapping the cells and creating large cracks on the slideSpreading of the material is usually performedwith the help of another glass slide by sliding itover the FNAC material gently to avoid crushartefacts

If the fluid content is thick or gelatinous, some drops of fluid may be smeared onto glass slides and immediately air-dried and stained

with rapid stains. Heavily bloodstained fluids can be processed

with the help of some of the red blood cell lysing fixatives (e.g. Devine's lysing solution or Cyto- Rich Red; TriPath Care Technologies, Burlington,

North Carolina, USA) that increase the diagnostic utility of FNAC by lysing the red blood

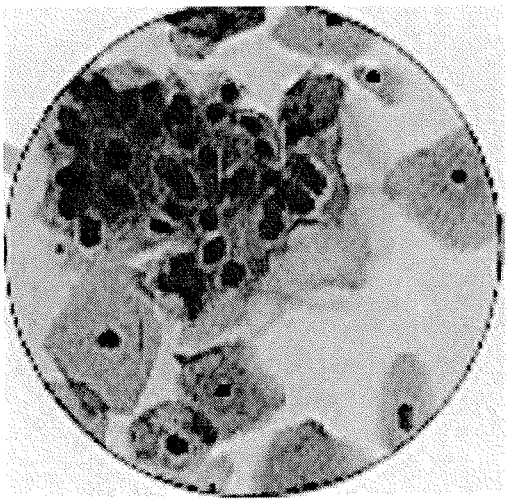
cells whilst preserving the cellular morphology and retaining the suitability for use in immunocytochemistry.

Liquid-Based Preparations

Liquid based cytology (LBC) was introduced initially for cervical smears, but some laboratories are increasingly processing other specimens, including FNAC, using this technology. After aspiration, the syringe and needle are thoroughly

rinsed with either saline or a fixative and for Shandon Cytospin preparations

or liquid-based preparations (LBC). Some laboratories prepare all FNAC specimens as Cytospin preparations. In order to enable a wider range of aspirators to obtain adequate FNAC samples, the specimen may be collected in a liquid preservative solution. The aspiration is performed in the usual way.



Cell Block

If the FNAC material is very bloody and paucicellular,

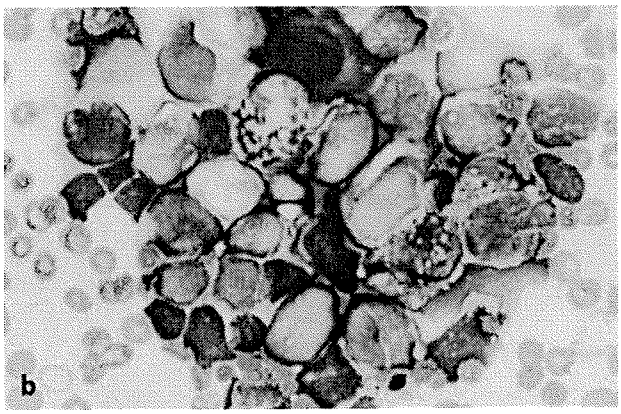
a cell-block technique may be helpful . The cell block is prepared with small tissue fragments or cell deposits after centrifugation. by using alcohol as the fixative.

Fixation

Air Drying

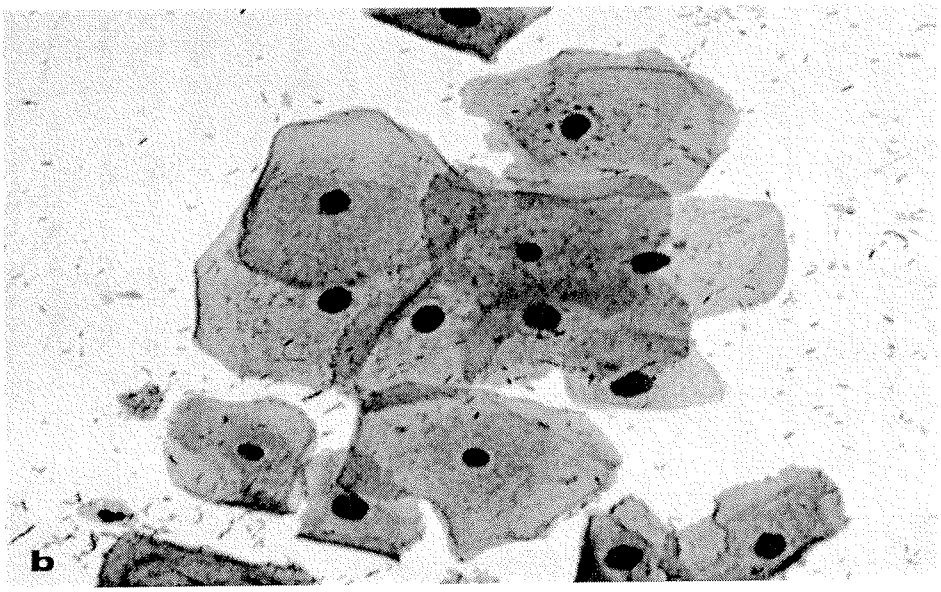
Immediate fixation of the FNAC specimen is crucial. The fixative depends on the choice of stain to be used, and the stain used depends on the preference within the laboratory; some prefer alcohol fixation followed by the Papanicolaou(Pap) stain, and some air-dried smears followed by Romanowsky staining (Diff Quick, May GrunwaldGiemsa). In conventional cell preparations, if slides are to be fixed by air drying, they need to be thinly spread and be dry to the naked eye within 5 min. If the specimen is very thick and does not visibly dry within that period, or if it is put into a sealed container before it is completely dry, air-drying artefacts will occur. Under the microscope, this is reflected by enlarged nuclei, fuzzy cell boundaries and the chromatin pattern assuming grotesque shapes, all of which may be misleading . Air-drying artefact may be the cause

of false positive or false negative diagnosis.



Papanicolaou Staining

The Pap stain uses a standard nuclear stain, haematoxylin, and two cytoplasmic counterstains, OG-6 and EA . The outcome of this method is crisp nuclear detail and transparency of the cytoplasm, which allows the examiner toIn FNAC practice, the use of Pap vs. Romanowskystains is subjective and depends on regi
or local preferences

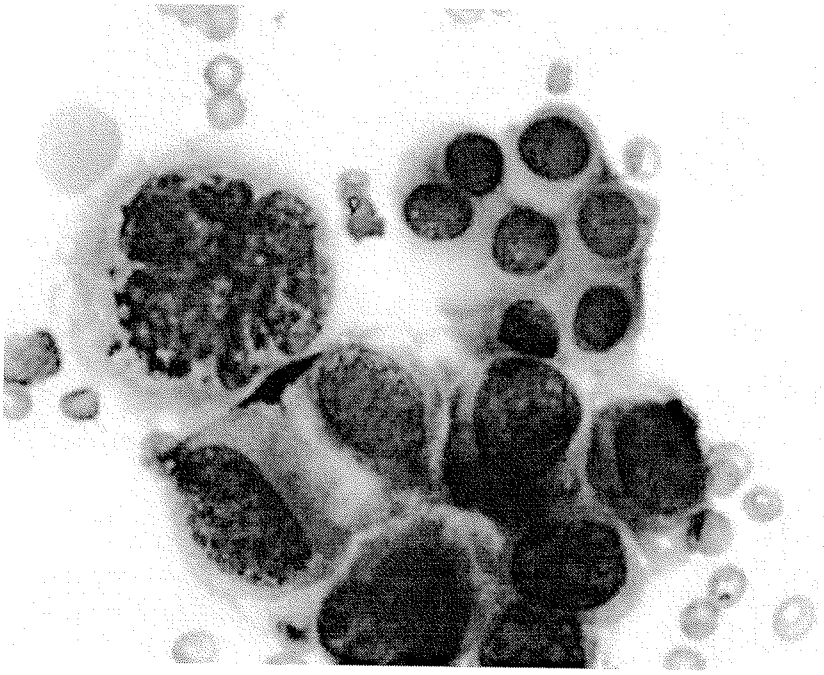


Pap staining procedure

Romanowsky Staining

Romanowsky stains, mixtures of eosin and methyleneblue, are a family of polychrome stains that achieve their effect by the production of azure dyes as a result of demethylation of thiazinesand the acidic component, eosin. Unlike the Pap stain they are metachromatic. Most Romanowsky stains used in cytology are aqueous stains as opposed to the methyl-alcohol-based stains of haematology. Many commercial stains are available, and most consist of a methanol based fixative and two dyes, which result in the differentiation of cytoplasmic and nuclear components. Most Romanowsky stains are rapid and

are useful in enhancing pleomorphism and distinguishing extracellular from intracytoplasmicmaterial



VALUE ADDED COURSE

FNAC TECHNIQUES AND STAINING, JULY – SEPT 2019, PA11

List of Students Enrolled

2nd Year MBBS Student			Signature
Sl. No	Name of the Student	Roll No	
1	JETESH SINGH	U18MB311	
2	KAMALESH C N	U18MB312	
3	KARTHIYAYINI .G	U18MB313	
4	KEERTHANA P	U18MB314	
5	KEISHAM LUXMIRANI	U18MB315	
6	LAKKAM UMESH KUMAR	U18MB316	
7	LAKSHMI PRIYA E	U18MB317	
8	LEKIWA O PALA	U18MB318	
9	LISHI YAM	U18MB319	
10	MADAN SHUBHAM SANJAY	U18MB320	
11	MAHI TYAGI	U18MB321	
12	MANIVANNAN N	U18MB322	
13	MARYAM MOHIDEEN PITCHAI	U18MB323	
14	MEDOZHAZO RUPREO	U18MB324	
15	MOHAMMED SALMAN	U18MB325	
16	MRINAL KUMAR	U18MB326	
17	NABAM YAMIN	U18MB327	
18	NALLI VASANTHSEETAL	U18MB328	
19	NEERAJ NAMASIVAYAM	U18MB329	
20	NEHA BARMAN	U18MB330	

RESOURCE PERSON

Dr.A. MANOHARAN
Reg. No 93333
Assistant Professor Department of Pathology
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Kurlapakkam, Puducherry-605 502.

COORDINATOR

PROFESSOR & HEAD DEPT. OF PATHOLOGY
SRI LAKSHMI NARAYAN INSTITUTE OF
MEDICAL SCIENCES,
PUDUCHERRY - 605 502.

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST,PONDICHERRY - 605003

FNAC TECHNIQUES AND STAINING

SHORT ANSWERS 6X5= 30

Course Code: PA11

I. ANSWER ALL THE QUESTIONS

1. WRITE A SHORT NOTES ON FNAC PROCEDURE
2. WRITE IN DETAIL ABOUT ASPIRATION TECHNIQUES
3. FIXATION TECHNIQUES
4. VARIOUS STAINING PROCEDURE USED FOR FNAC PROCEDURES
5. ADVANTAGES AND DISADVANTAGES OF PAP STAIN
6. ADVANTAGES OF ROMNAWSKY STAIN

Malvi Tyagi.

FNAC TECHNIQUES & STAINING.

Roll. no 33

25/30

T

1. FNAC procedure :-

Fine Needle Aspiration Cytology is a simple, quick & inexpensive method that is used to sample superficial masses like those found in the neck and is usually performed in the Outpatient and clinic. It causes minimal trauma to the the patient and carries virtually no risk of complications.

2. Aspiration technique :-

Fine Needle aspiration is a type of biopsy procedure. In fine Needle aspiration, a thin needle is inserted into an area of abnormal appearing tissue or body fluid. As with other types of biopsies, the sample collected during fine needle aspiration can help make a diagnosis or rule out conditions such as cancer.

3. fixation techniques :-

Perfusion :- Tissues can be perfused with fixative following exsanguination and saline perfusion to allow rapid fixation of entire Organs.

Manivannan. N

FNAC TECHNIQUES AND STAINING

18/30

I ANSWER THE FOLLOWING

1) FNAC :

Fine Needle Aspiration Cytology (FNAC) is a technique whereby cells are obtained from a lesion using a thin bore needle and smears are made for cytopathology diagnosis. This technique is based on the fact that tumor cells are less cohesive and are easily aspirated.

2) Aspiration Techniques

There are 2 techniques :-

① FNAC with Aspiration

② FNAC without Aspiration

FNAC with Aspiration :-

* Site of FNAC should be cleaned by Spirit Swab
* Needle is introduced in the swelling and is

Student Feedback Form

Course Name: **FNAC TECHNIQUES AND STAINING**

Subject Code: **PA 11**

Name of Student: Keerthana · P Roll No.: U18MB314

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5 ✓

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

None

Signature

Date:

Student Feedback Form

Course Name: FNAC TECHNIQUES AND STAINING

Subject Code: **PA 11**

Name of Student: Tejesh Singh Roll No.: U18MB21

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					✓
2	Course contents met with your expectations					✓
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective				✓	
6	Instructors encourage interaction and were helpful					✓
7	The level of the course					✓
8	Overall rating of the course	1	2	3	4	5

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

None

Signature

Date:

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research

(Deemed to be University under section 3 of the UGC Act 1956)

CERTIFICATE OF MERIT

This is to certify that KEERTHANA. P has actively participated in the Value Added Course on FNAC TECHNIQUES AND STAINING held during July- Sep 2019 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. A.Manoharan
RESOURCE PERSON

Dr. Pammy Sinha
COORDINATOR

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research
(Deemed to be University under section 3 of the UGC Act 1956)

CERTIFICATE OF MERIT

This is to certify that JETESH SINH has actively participated in the Value Added Course on FNAC TECHNIQUES AND STAINING held during July- Sep 2019 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. A. Manoharan
RESOURCE PERSON

Dr. A. MANOHARAN
Reg. No. 69513
Assistant Professor Department of Pathology
Sri Lakshmi Narayana Institute of Medical Sciences
Osudu, Kudapakkam, Puducherry-605 502.

Dr. Pammy Sinha
COORDINATOR

PROFESSOR & HEAD, DEPT. OF PATHOLOGY
SRI LAKSHMI NARAYAN INSTITUTE OF
MEDICAL SCIENCES.
PUDUCHERRY 605 502.

22.09.2019

From

Dr.Pammy sinha
Professor and Head,
Department of pathology
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper Channel

To

The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course:FNAC TECHNIQUE AND STAINING

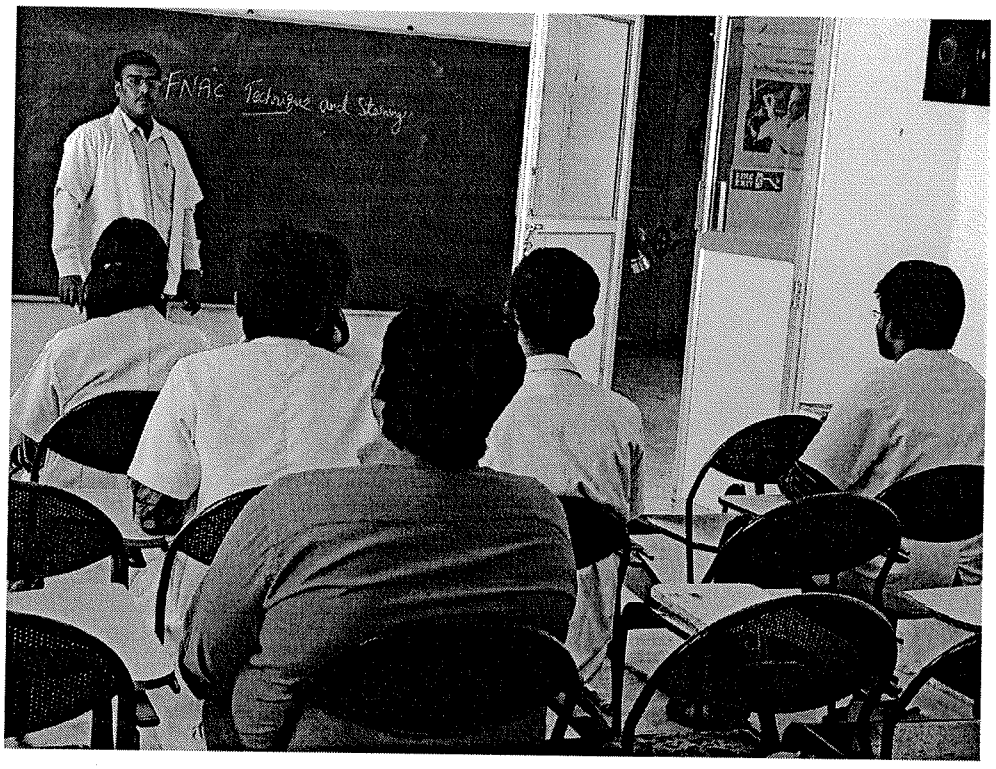
Dear Sir,

With reference to the subject mentioned above, the department has conducted thevalue-added course titled: :FNAC technique and staining procedure in IInd MBBS JULY- SEP 2019 for 20 students . We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

Dr.Pammysinha

PROFESSOR & HEAD, DEPT. OF PATHOLOGY
SRI LAKSHMI NARAYAN INSTITUTE OF
MEDICAL SCIENCES,
PUDUCHERRY - 605 502.


FNAC Technique and Story