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ADIPOSE TISSUE BIOPSY NUTRITION CENTRES

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1. Scope

This procedure is to be followed by the ECRIN Nutrition Centres when performing adipose tissue needle biopsy.

This procedure is used to describe the technique of the adipose tissue needle biopsy, taking 100 to 200 mg of adipose tissue in the peri-umbilical region for histopathological examination and gene expression analysis.

2. Responsibilities

It is the responsibility of the Management team in the Nutrition Centres to ensure that this procedure is adapted and followed.

3. References

- SOP for adipose tissue needle Biopsy University of Leeds, human appetite research unit.
- SOP for adipose tissue needle Biopsy, Huddinge University Hospital 9/3 2001
- Mode opératoire : Biopsie de tissu adipeux A l'aiguille CRNH-RA-Version 001, CHLS Pierre Bénite- France

4. Terms, definitions, abbreviations

ECRIN: European Clinical Research Infrastructures Network

WHO: World Health Organisation

SOP: Standard Operation Procedure

5. Documentation

6. General

The purpose of this Standard Operation Procedure is to ensure that the process of adipose tissue needle biopsy for Nutrition Centres is performed under standardised conditions.

7. Safety Considerations

- **Please remember that all procedures that involve contact with a biopsy area must be done under sterile conditions.**

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ADIPOSE TISSUE BIOPSY NUTRITION CENTRES

a) For Staff handling biopsy

- Gloves must be worn when handling a biopsy.
- It is recommended that any member of staff handling a biopsy are vaccinated against Hepatitis B.
- A laboratory coat is worn and safety glasses and a mask should be available for staff if required.
- Used needles and syringes must be discarded into a puncture-resistant sharps container.
- Cover all non-intact skin exposed to patient blood or body fluid with a water-impermeable occlusive bandage.
- Remove all personal protective equipment before leaving the laboratory or work area.

b) For Patient

- Check for the absence of abnormal coagulation and allergies to local anaesthetics.
- Check for the absence of contraindicated treatments.

8. Sample Requirements

Biopsies must be clearly and permanently identified (with labels or permanent marker) with the information required by the local laboratory: subject's first and last names, hospital number, date of birth and date and time when the sample was collected.

9. Materials

a) For Asepsis

Standard cleaning equipment for transepidermal biopsies:

Sterile water

Disinfectant solution,

Single use gloves,

Compress & cleaning swabs,

A single use shaver if required

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<i>Reviewed By/Date:</i>		



ADIPOSE TISSUE BIOPSY NUTRITION CENTRES

b) For anesthesia

Sterile gloves

20 ml anaesthetic agent without adrenergic addition (Lidocaine - Lignocaine)

10ml syringe

Subcutaneous needle

c) For Biopsy

A fenestrated sterile field

A sterile biopsy needle kit.

Sterile wound dressing.

d) For adipose tissue washing

Sterile labelled cryovial,

Sterile saline solution,

Sterile tweezers,

Beaker

Filter

e) For storage of tissue and transport

One vial of formalin (if sample for anapath).

A liquid nitrogen tank depending on storage post biopsy

Dispatch note

Laboratory forms

10. Patient preparation

- The patient is lying in a bed in underwear and/or hospital gown.
- Explain the procedure with the subject.
- Make the subject comfortable in a semi-recumbent / supine position on the bed.

Location of the biopsy:

Author / Date: _____	ECRIN	Doc No: SOP-NUTR-0003
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ADIPOSE TISSUE BIOPSY NUTRITION CENTRES

- The biopsy is performed in the periumbilical area about 5 to 10 cm laterally from the umbilicus.

Asepsis of the selected area

- Wash hands
- Clean with disinfectant solution
- Shave if required
- Rinse with Sterile water
- Clean with disinfectant solution again

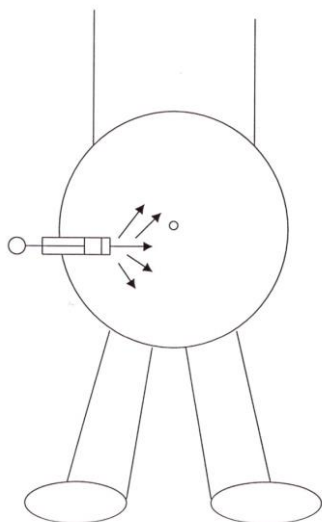
11. Anesthesia

- Wash hands.
- Wear single use gloves.
- Draw up 10ml of anaesthetic agent into 10ml syringe.
- **!!! DO NOT DRAW UP AND GIVE WITH THE SAME NEEDLE !!!**
- **!!! MAXIMAL DOSAGE OF LIGNOCAINE FOR LOCAL ANESTHESIA IS 3mg/kg, BUT NOT TO EXCEED 200mg !!! 200mg IS EQUIVLENT TO 4X5ml VIALS of 1% LIGNOCAINE !!!**
- Inject subcutaneously lidocaine just under the insertion site using subcutaneous needle (to numb the skin surface) and in a half circular fashion superficially in the adipose tissue (see picture), to numb the tissue.
- Wait about 5 to 10 mins.

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ADIPOSE TISSUE BIOPSY NUTRITION CENTRES



12. Sampling

- Wash hands with iodine solution.
- Wear sterile gloves and cloth.
- ~~Open sterile field and place under Biopsy selected site and open consumables onto field.~~
- Clean with iodine solution the selected area again.
- Open suction equipment and hold suction syringe and place its end into the top of the biopsy needle. syringe and push the piston to the bottom of the syringe.
- Let ~1/3 of the needle enter the subcutaneous fat. Pull the piston on the syringe back to create some suction.
- Slowly move the syringe in and out (like playing a fiddle), keeping the needle quite superficial. Try to rotate the needle as you sample.
- If necessary, move position of the needle so that new areas are sampled. About 1g of tissue is equivalent to about 1ml.
- The duration of sampling should not take more than 2 or 3 minutes.

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Edition No. 00	Standard Operating Procedure (SOP)	
<i>Reviewed By/Date:</i>		



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- Withdraw the needle from the abdomen and ask patient or nurse to compress the sampling area to minimise bruising.

13. Washing the adipose tissue

- Draw directly into the syringe containing the aspirate sterile saline solution (15 ml). Remove the needle from the syringe and seal the extremity of the syringe with the finger, remove the piston and return the syringe to empty the contents onto the sterile cloths placed on the top of a beaker or tube.
- Put the piston back into the syringe, re-draw 20 ml of saline to wash the adipose tissue.
- Rinse the adipose tissue with saline several times to remove any blood and fibrin.
- The flushing time does not exceed 2-3 minutes to prevent RNA degradation.
- Place the tissue into the labelled cryovial, using the tweezers, and immediately freeze in liquid nitrogen.
- **Please note! The time between sampling and freezing should be <5min.**
- After ~5min of compression on the biopsy site, cover with a sterile dressing. an ice pack can also be placed on the area to prevent hematoma formation (common).

14. Advice to patient

- The dressing should be kept for 2 days
- Do not wet the dressing (showers allowed, bath prohibited)
- No aspirin allowed for at least four days after the biopsy. For pain, take paracetamol
- Do not practice any sport for 4 days after the biopsies
- Tell the subject to expect some bruising, which should disappear within a week.
- Provide a wound dressing replacement kit to the patient.

15. Disinfection of equipment

As soon as the biopsy is performed, the instruments are rinsed with water and then disinfected with a disinfectant.

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The instruments are then brushed, rinsed thoroughly with water, dried with papertowels and placed in a sterilization bag to be sent for sterilization.

16. Transfer of biopsy

Biopsies are stored in liquid nitrogen or transported to the corresponding laboratory for analyses. Transport documents including dispatch note are attached to all the samples and archived in the laboratory.

17. Limitations & Pitfalls of the Examination

N/A

18. Method Validation

Local methods

19. Procedure Notes & Other Pertinent Information

N/A

20. Appendices

N/A