

Internal placement of acoustic transmitters in sturgeon



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Preferred techniques for invasive surgery

- Matsche, M. and R. Bakal. 2006. General and reproductive health assessments of shortnose sturgeon with application to Atlantic sturgeon: anesthesia, phlebotomy, and laparoscopy. Maryland Department of Natural Resources. Oxford, Maryland. 27 pp.





Why use anesthesia ?

Minimize handling stress due to physical restraint

Increase safety for the fish and the handlers

Reduce fish movement to facilitate performing a procedure

In general, to provide for the greatest welfare of the fish during handling

Conclusions of the Technical Sub-Committee for developing Atlantic sturgeon research protocols

“Because the administration of some anesthetics results in additional stress to fish, some researchers contend that it is an unnecessary and possibly risky procedure. However, others assert that for invasive procedures, it is more humane for the fish and safer for the researcher to administer anesthetics.

We recommend that whenever it is feasible and practical for the researcher to administer anesthetics at the proper dosage, that anesthetics be used both to reduce the risk to the researcher conducting the activity and to ensure humane treatment of the fish.”

Damon-Randall, K. and 9 co-authors. In review. Atlantic sturgeon research protocols. NOAA Technical Report.

Desirable traits for anesthesia:

- Immobilize fish quickly for handling
- Reduce stress response during handling
- Quick fish recovery time
- Legal for use (FDA)
- Withdrawal time - short or none
- Low cost : high benefit ratio

Anesthesia - continued

- MS-222 is the only FDA-approved drug for fish
(Some exceptions apply for USFWS with T&E species)
- Use concentration from 100 – 250 mg/L depending on species, water temp., desired level of induction
- Check pH of anesthesia bath and use baking soda to help neutralize if pH is lower than ambient
(could be as much as 2:1 by weight of baking soda : MS-222)
- Maintain proper D.O. and temperature in anesthesia bath
- Avoid over exposure of fish to anesthesia
(observe for respiration rate and excessive redness in skin - hypoxia)
- Allow some recovery time in freshwater



Anesthesia reservoir

Can be set up as 110 or 12 Volt system

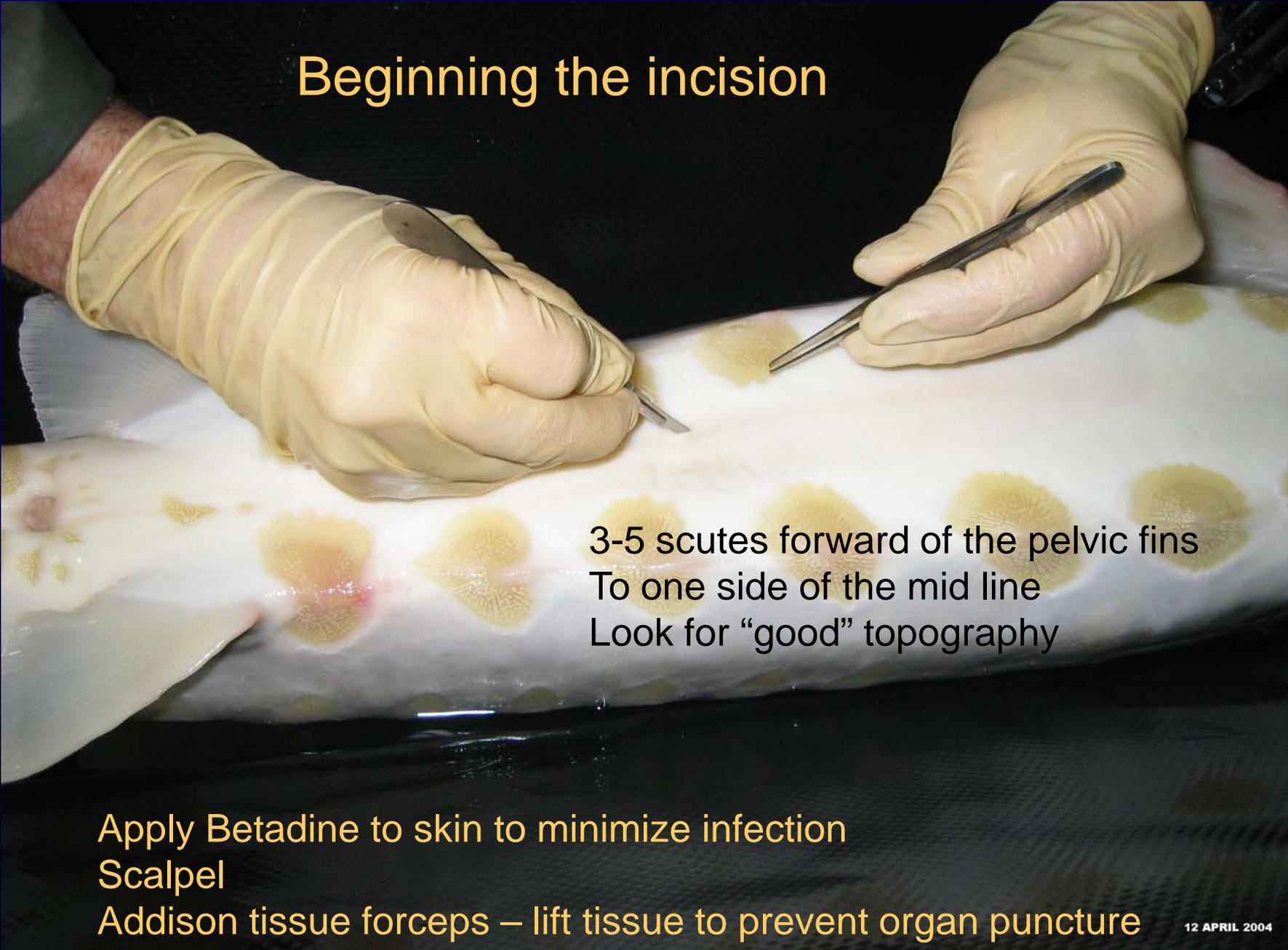
Field set up for
transmitter implantation
tomorrow



Instruments in 70% ETOH



Beginning the incision

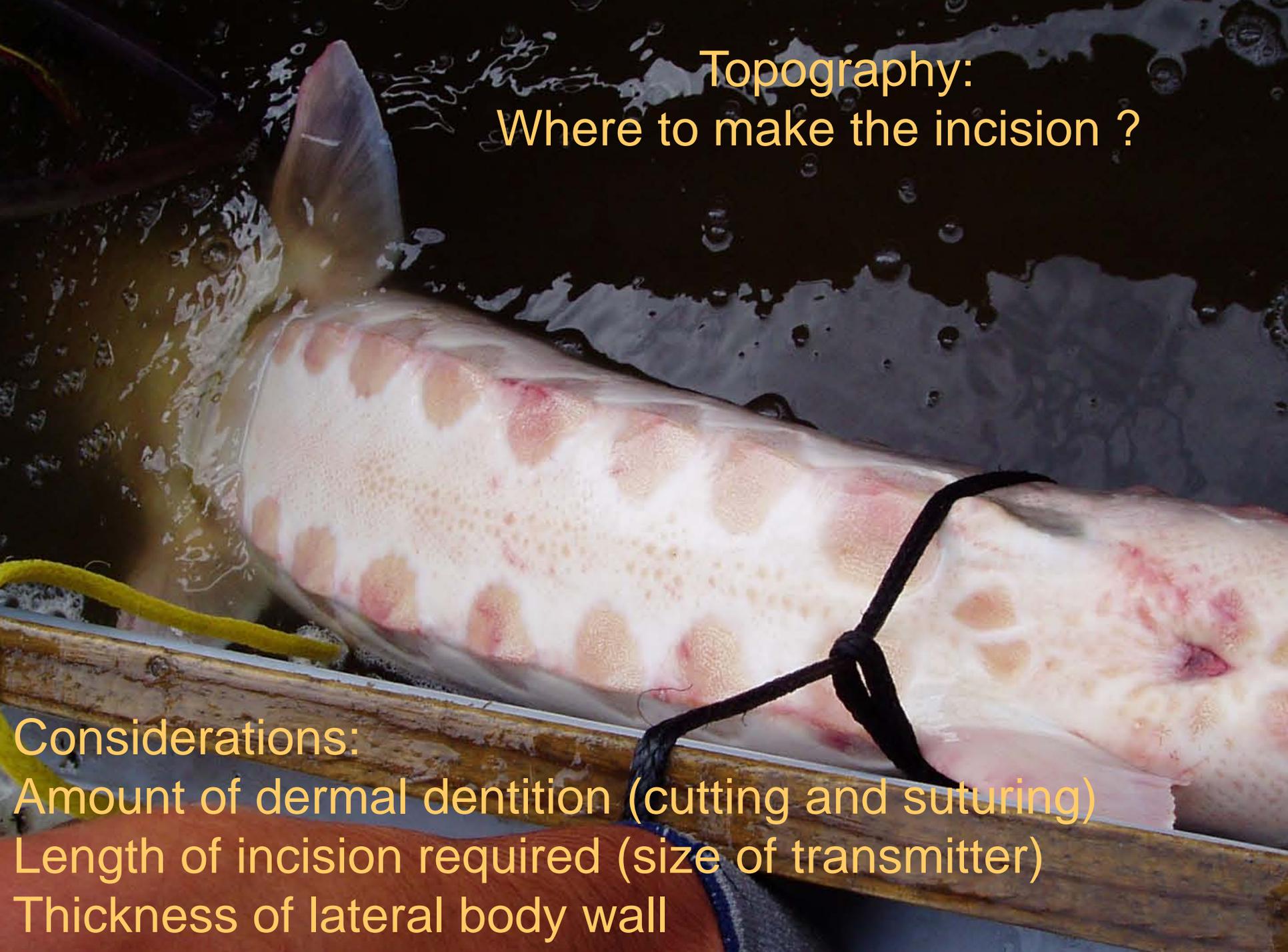


3-5 scutes forward of the pelvic fins
To one side of the mid line
Look for “good” topography

Apply Betadine to skin to minimize infection

Scalpel

Addison tissue forceps – lift tissue to prevent organ puncture

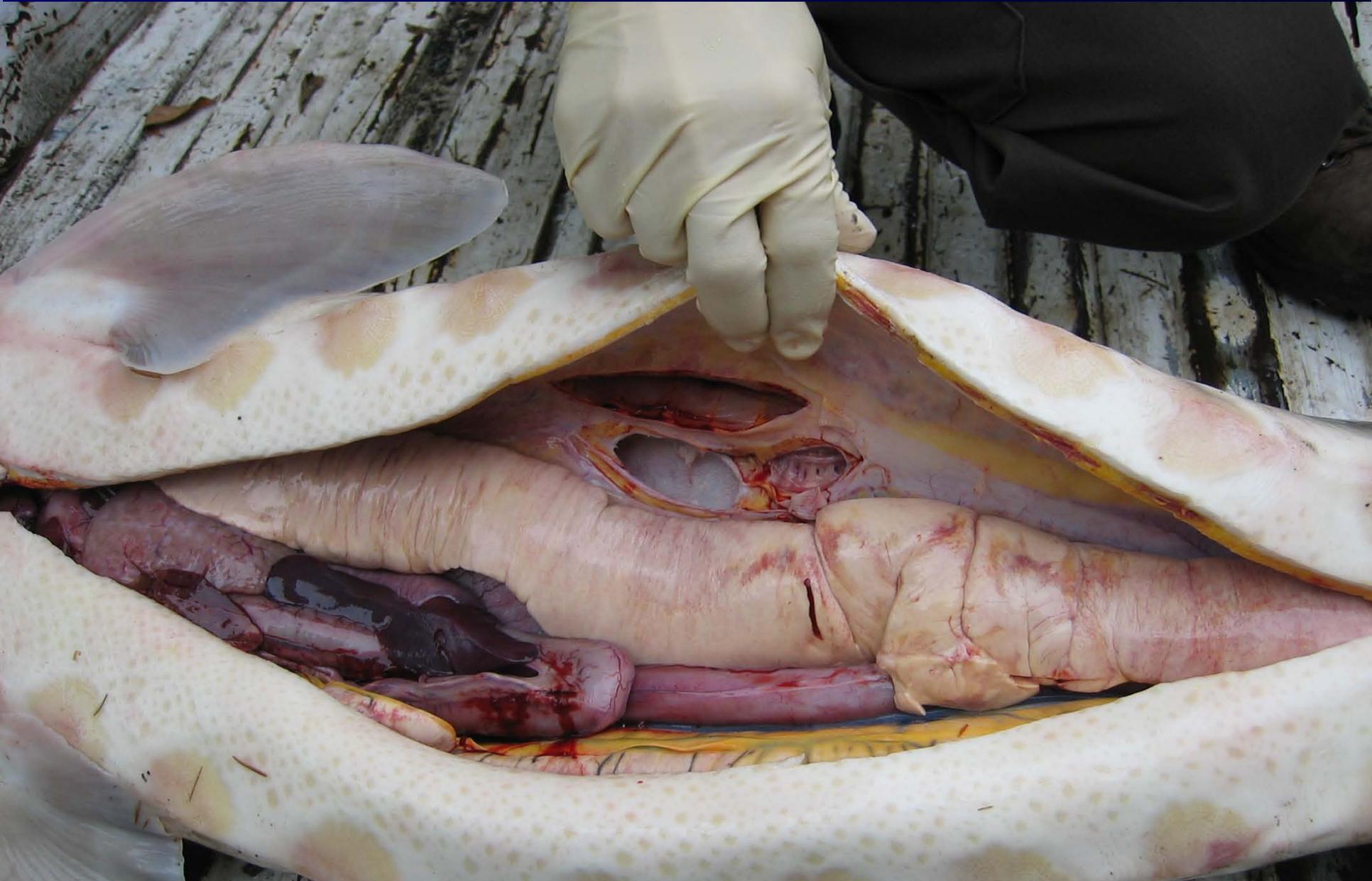


Topography:
Where to make the incision ?

Considerations:
Amount of dermal dentition (cutting and suturing)
Length of incision required (size of transmitter)
Thickness of lateral body wall



Mature male

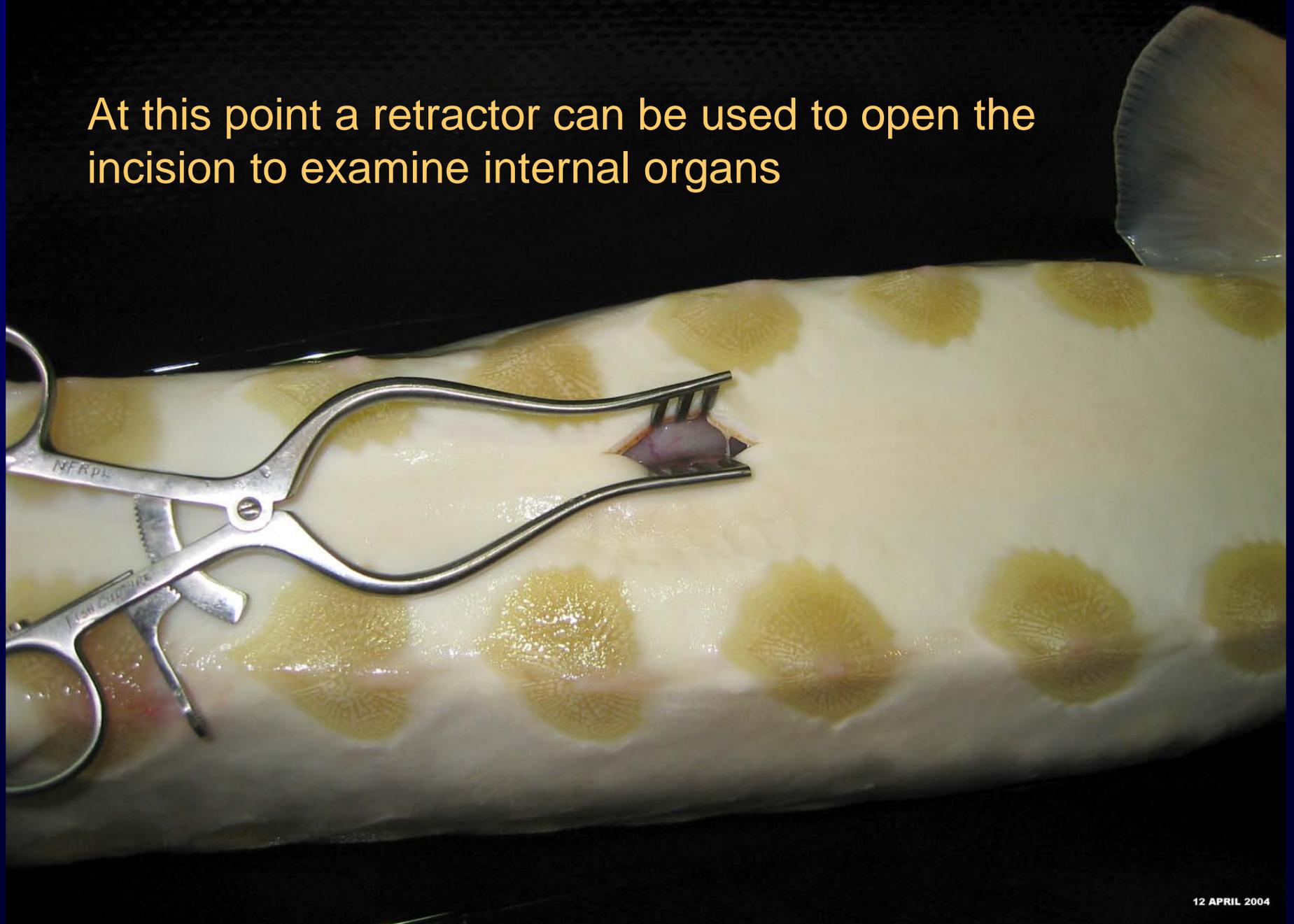


Incision, continued



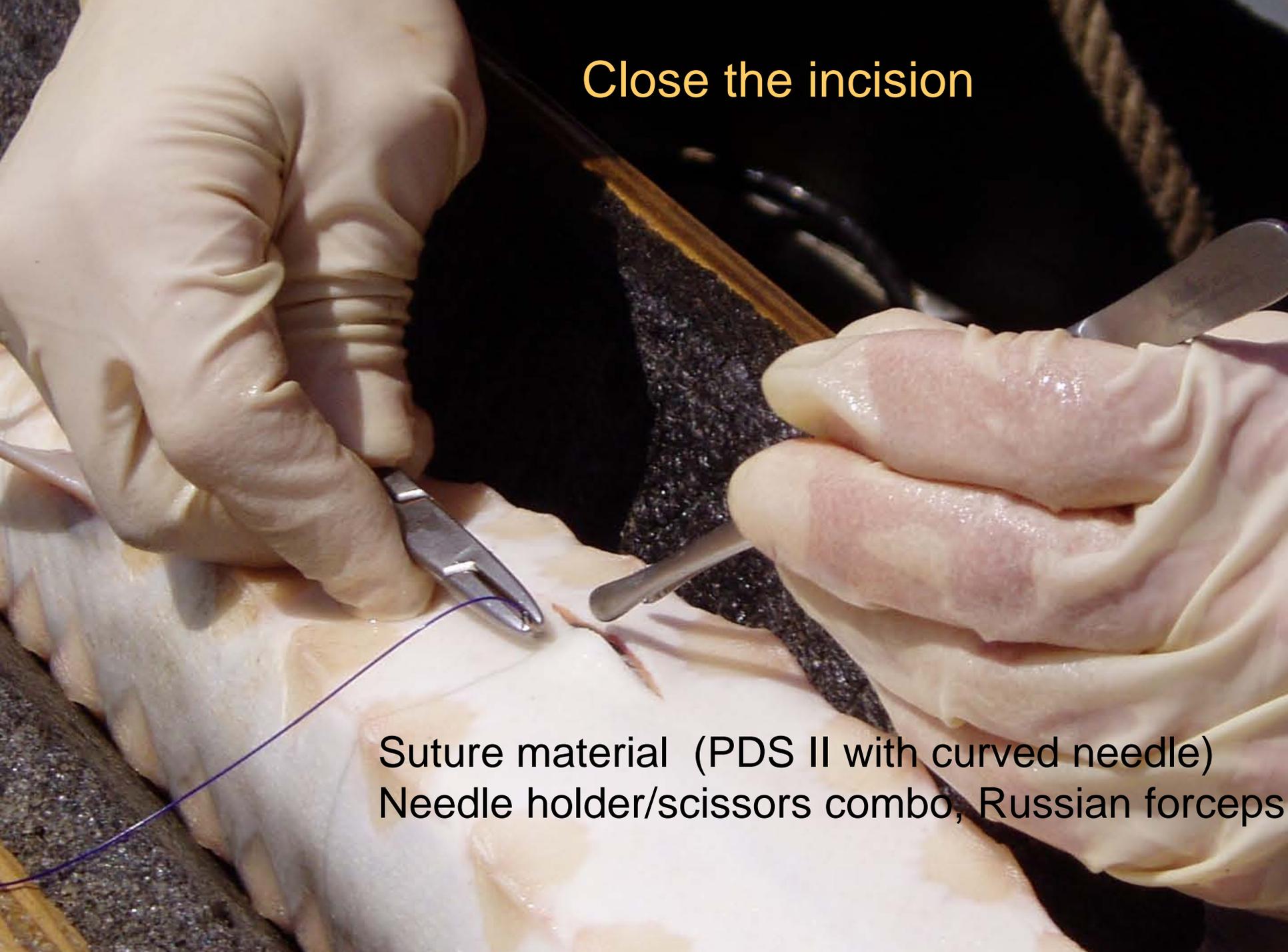
Carefully cut through into the body cavity
Elongate incision to accommodate transmitter

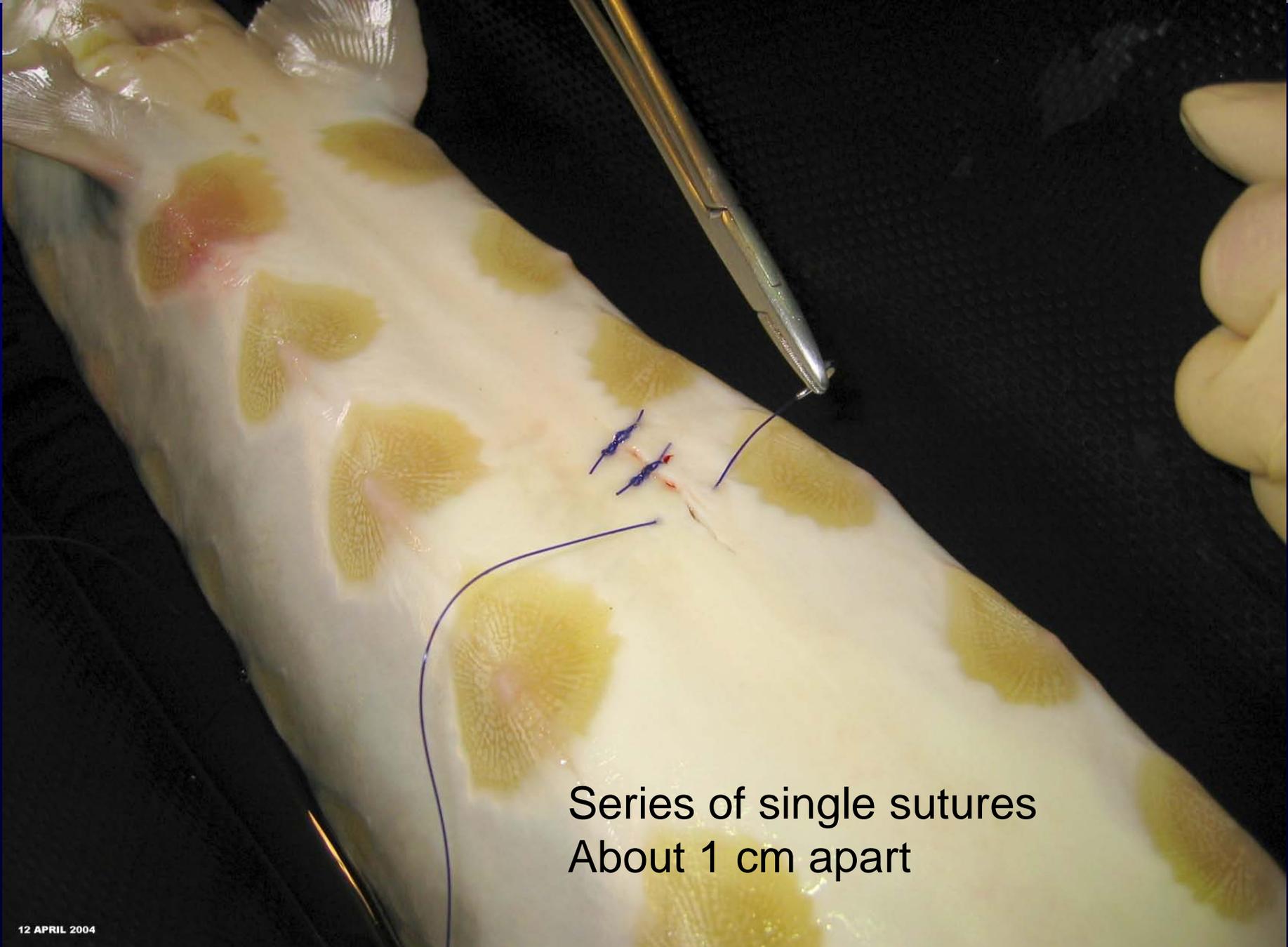
At this point a retractor can be used to open the incision to examine internal organs



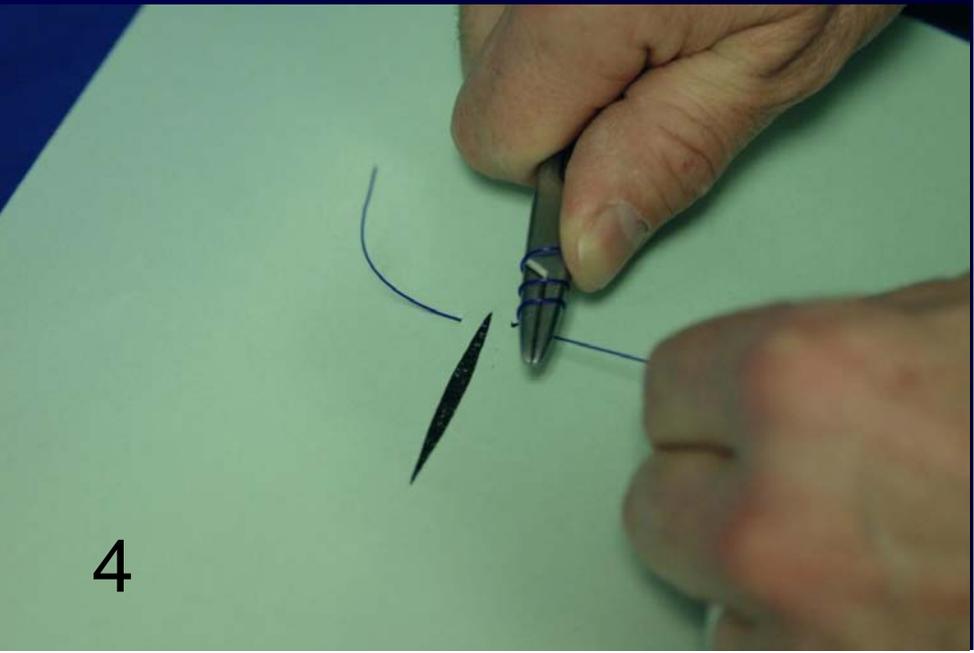
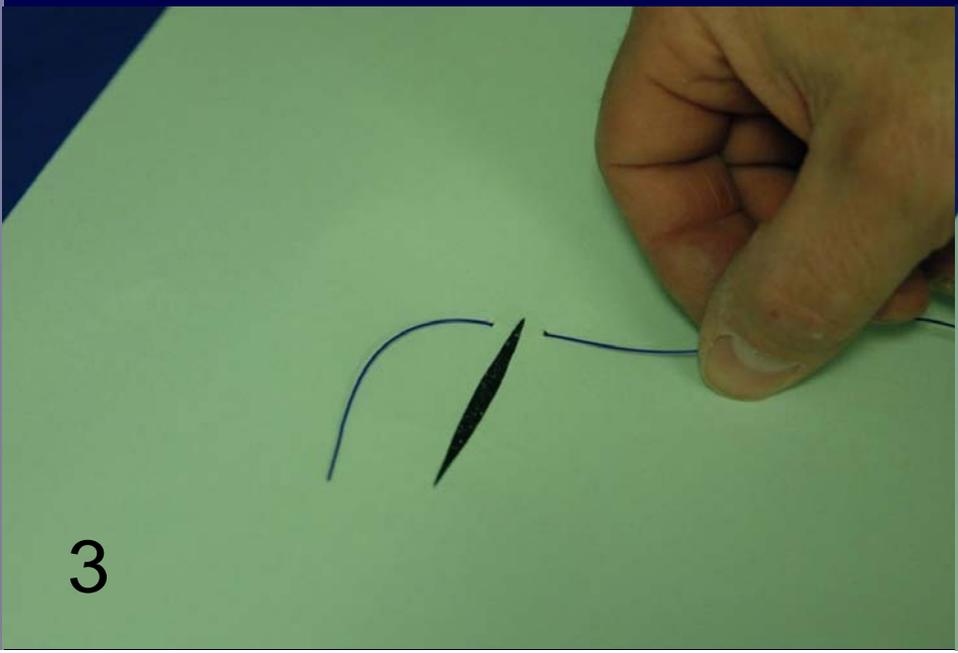
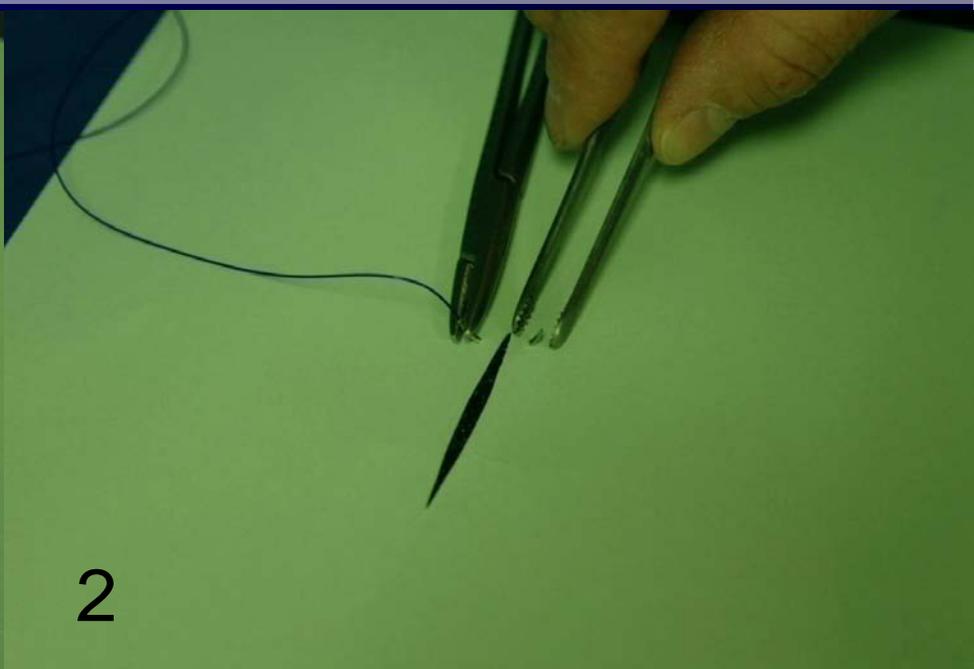
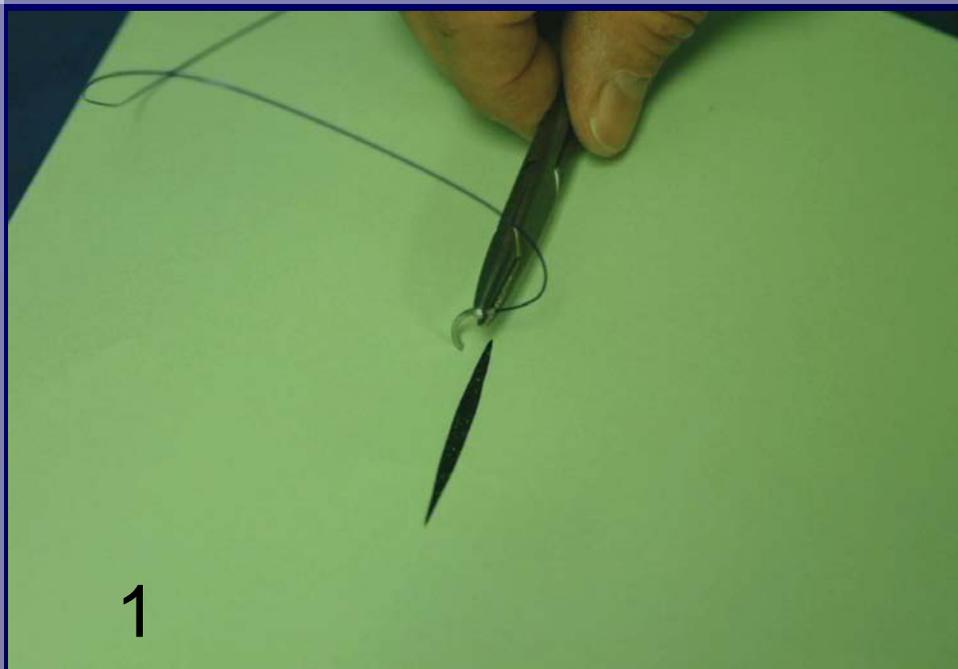
Close the incision

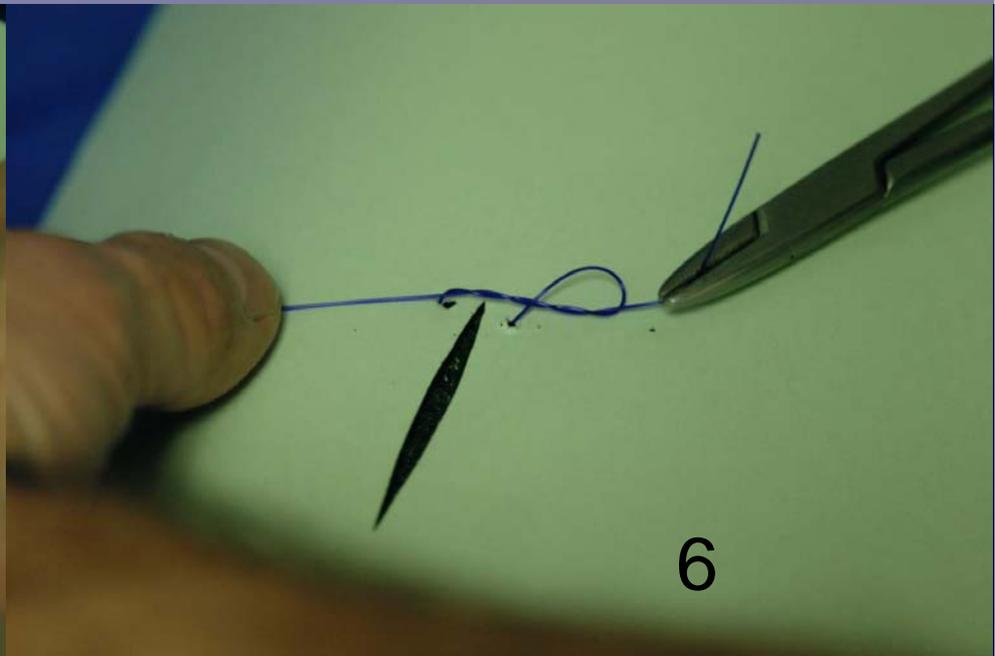
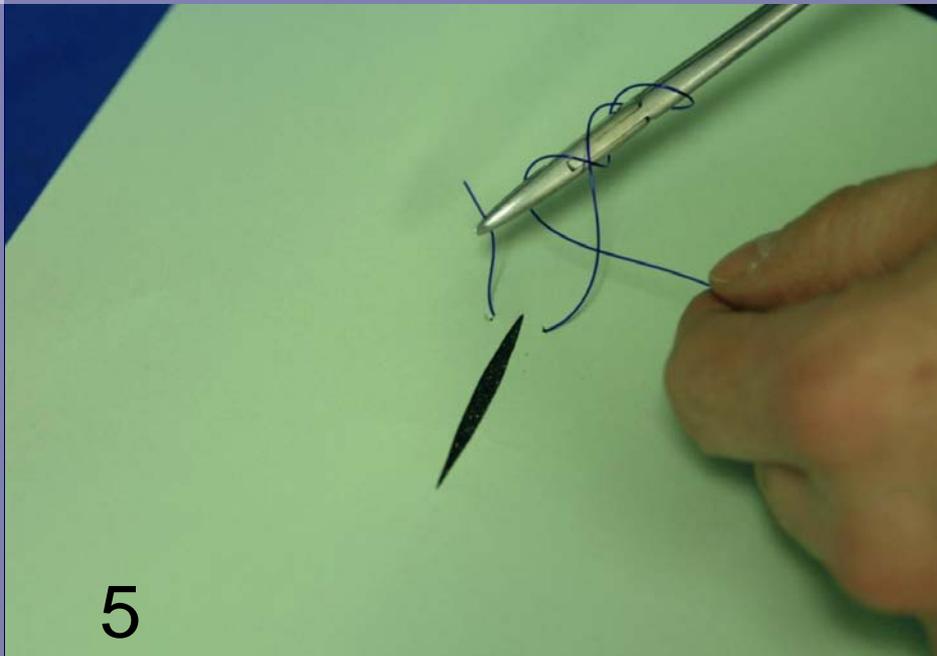
Suture material (PDS II with curved needle)
Needle holder/scissors combo, Russian forceps





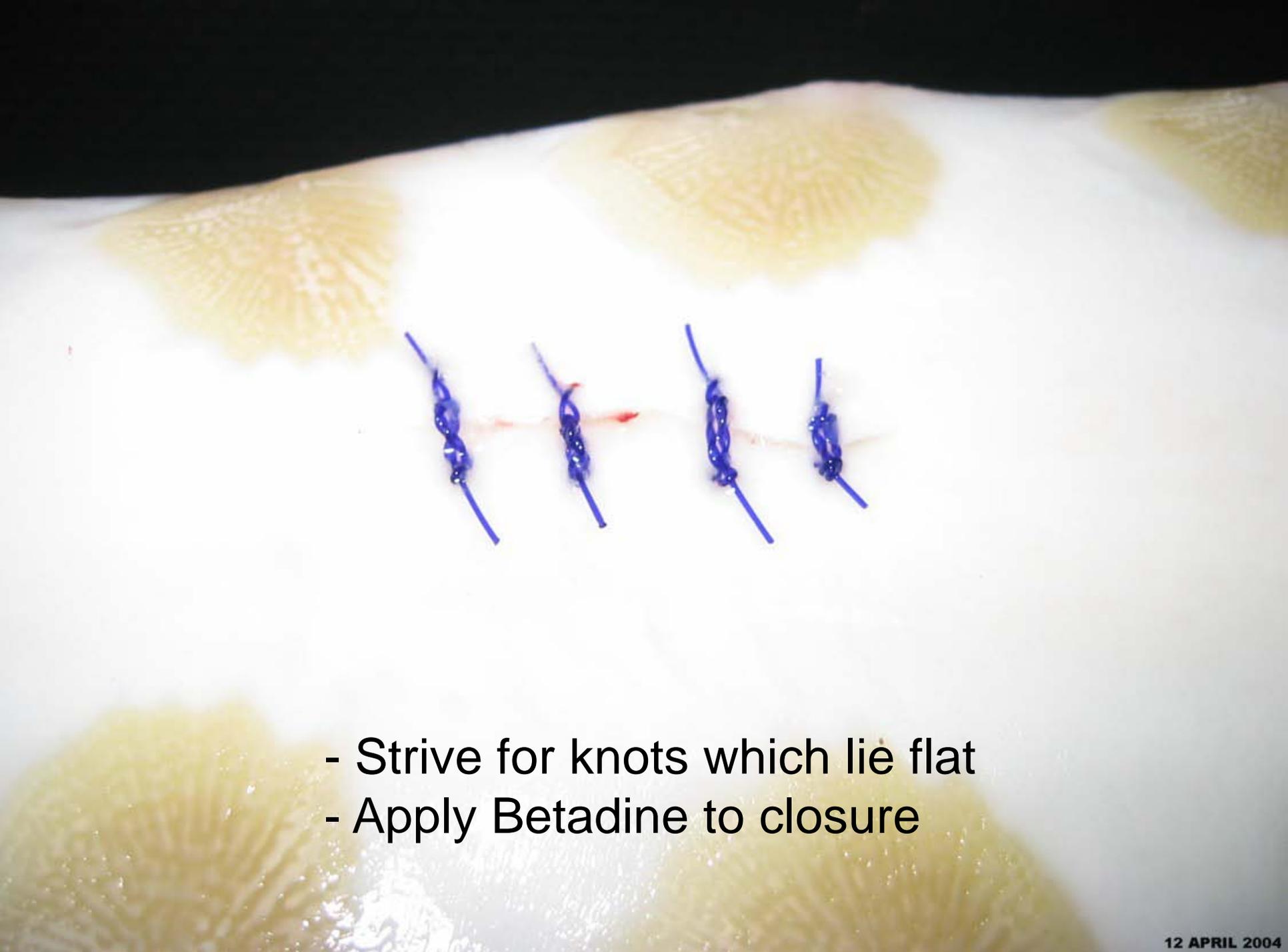
Series of single sutures
About 1 cm apart





Repeat steps 4 – 7 to obtain a double knot then trim suture

Repeat entire process along the length of the incision



- Strive for knots which lie flat
- Apply Betadine to closure



Allow for recovery
before release

Be one with the
resource !

