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Endocardial Left Atrial Appendage Occlusion: Which Device for Which Patient?

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Disclosures

Physician name	Company	Relationship
Horst Sievert	Abbott, Access Closure, AGA, Angiomed, Aptus, Atrium, Avinger, Bard, Boston Scientific, Bridgepoint, Cardiac Dimensions, CardioKinetix, CardioMEMS, Coherex, Contego, Covidien, CSI, CVRx, EndoCross, ev3, FlowCardia, Gardia, Gore, Guided Delivery Systems, InSeal Medical, Lumen Biomedical, HLT, Lifetech, Lutonix, Maya Medical, Medtronic, NDC, Occlutech, Osprey, Ostial, PendraCare, pfm Medical, Recor, ResMed, Rox Medical, SentreHeart, Spectranetics, SquareOne, Trireme, Trivascular, Venus Medical, Veryan, Vessix	Consulting fees, Travel expenses, Study honoraria
	Cardiokinetix, Access Closure, Lumen Biomedical, Coherex, SMT	Stock options, Stocks
	Cook, St. Jude Medical	Grant Research Support



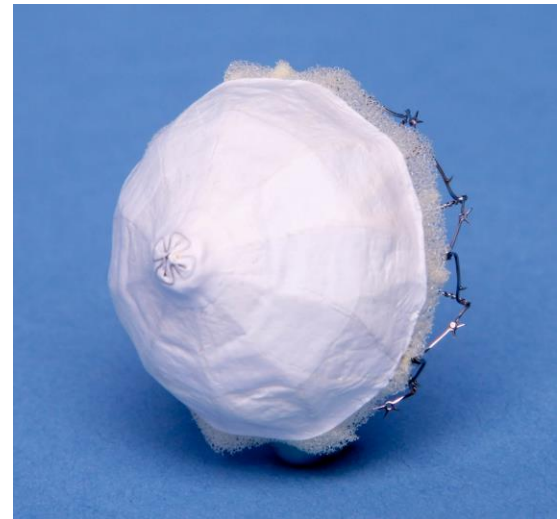
Watchman FLX



ACP → Amulet



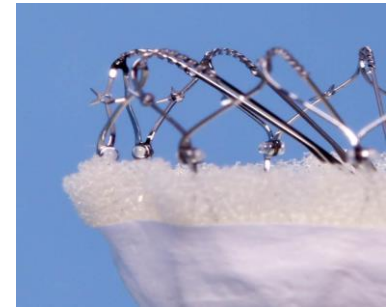
Lariat



WaveCrest

Coherex WaveCrest

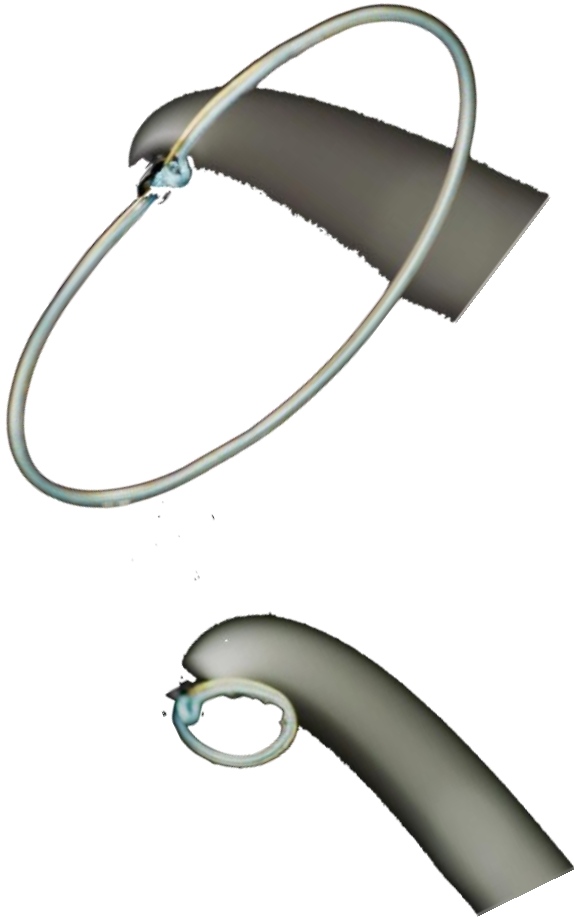
- **Retractable anchors**
 - Separation of device positioning and anchoring
- ePTFE occluder material is **occlusive** and non-thrombogenic
- Distal contrast injection
 - to assess stability
 - to assess occlusion
- 3 sizes (22, 27, 32mm)



Coherex WaveCrest

- Advantages:
 - Very short landing zone
 - Sheath does not have to be introduced deeply into the LAA
- Limitation:
 - Sheath has to be perpendicular to the landing zone
- An occlusive membrane can be seen as advantage or disadvantage

Sentre Heart - LARIAT



- Pericardial access
 - Wire with magnetic tip → pericardial space
- Transseptal access
 - Wire with magnetic tip → LAA
- The two wire find each other
- A loop suture is advanced over the pericardial wire
- LAA sutured from outside

LAA Ligation

- Advantages
 - Some of the most serious complications of LAA closure are less likely to occur or impossible
 - Tamponade
 - Device embolisation
 - Thrombus on a device
- Disadvantages
 - Learning curve for pericardial puncture
 - Not possible
 - after cardiac surgery
 - in large LAA body
 - retroflexed LAA

Device Closure

- It is rare that a LAA can not be closed
 - 90-95% closure rate with all techniques
- There are no data comparing the devices head to head
- You can almost use what you are used to use
- However, the devices have
 - some specific exclusion-inclusion criteria
 - some advantages and disadvantages in specific anatomical subsets

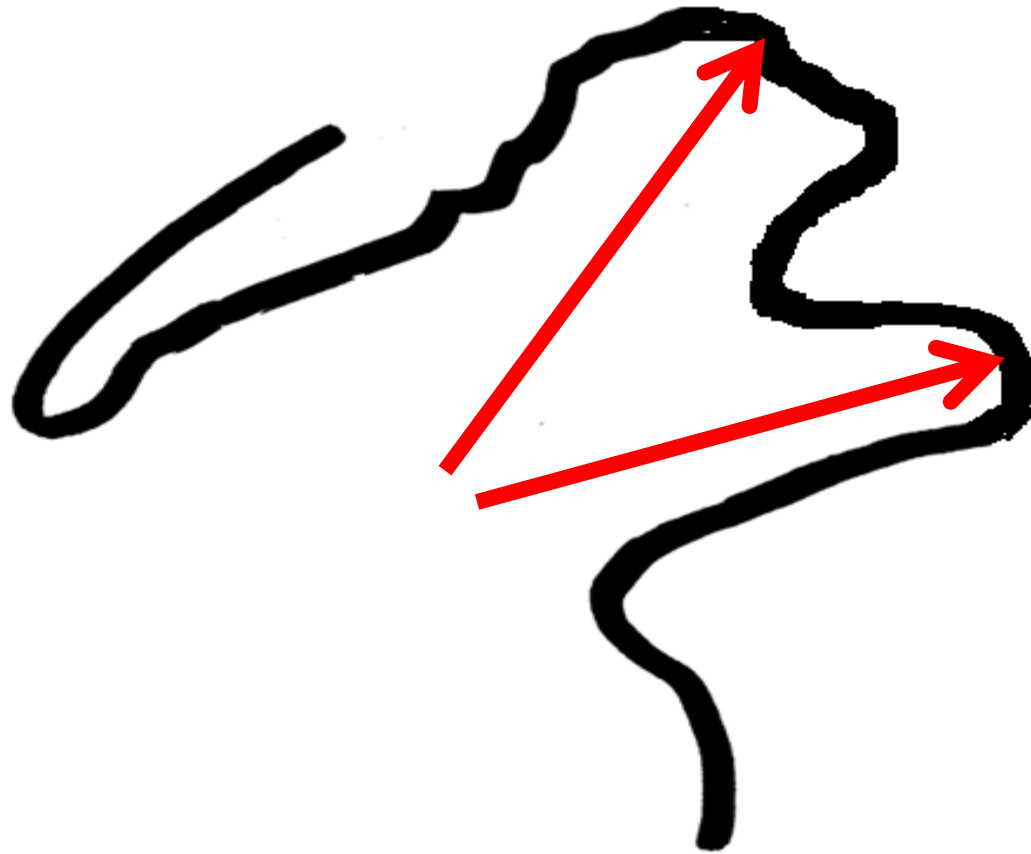
Size of the LAA

- Watchman FLX:
 - Landing zone has to be 14 - 32 mm
- Amulet
 - Landing zone has to be 11 – 31 mm
- Lariat
 - Diameter of the LAA body has to be < 45mm

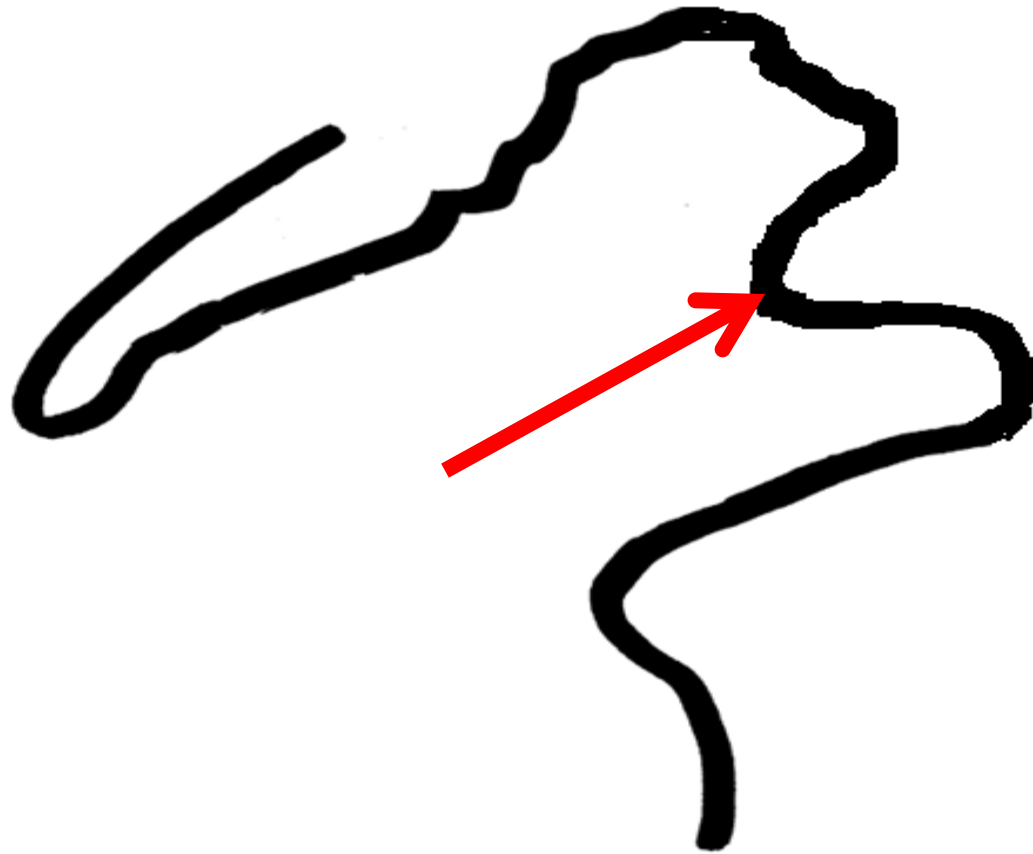
Morphology of the LAA

- Watchman FLX:
 - Minimum "functional" LAA length should be at least equal to device diameter
- Amulet
 - Minimum "functional" LAA length 10mm
- Lariat
 - Posterior oriented and "chicken wing"
LAAs can not be closed

Functional landing length



Functional landing length



Chicken Wing

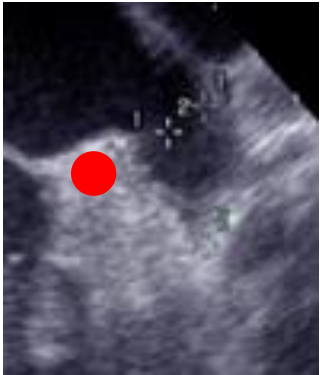
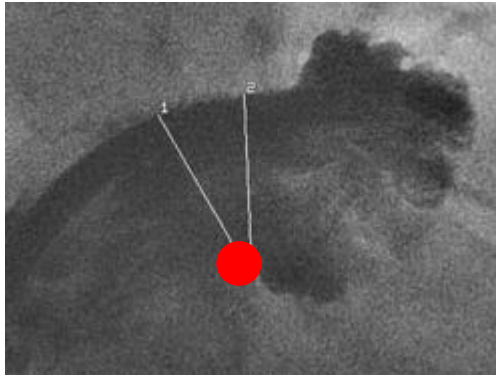
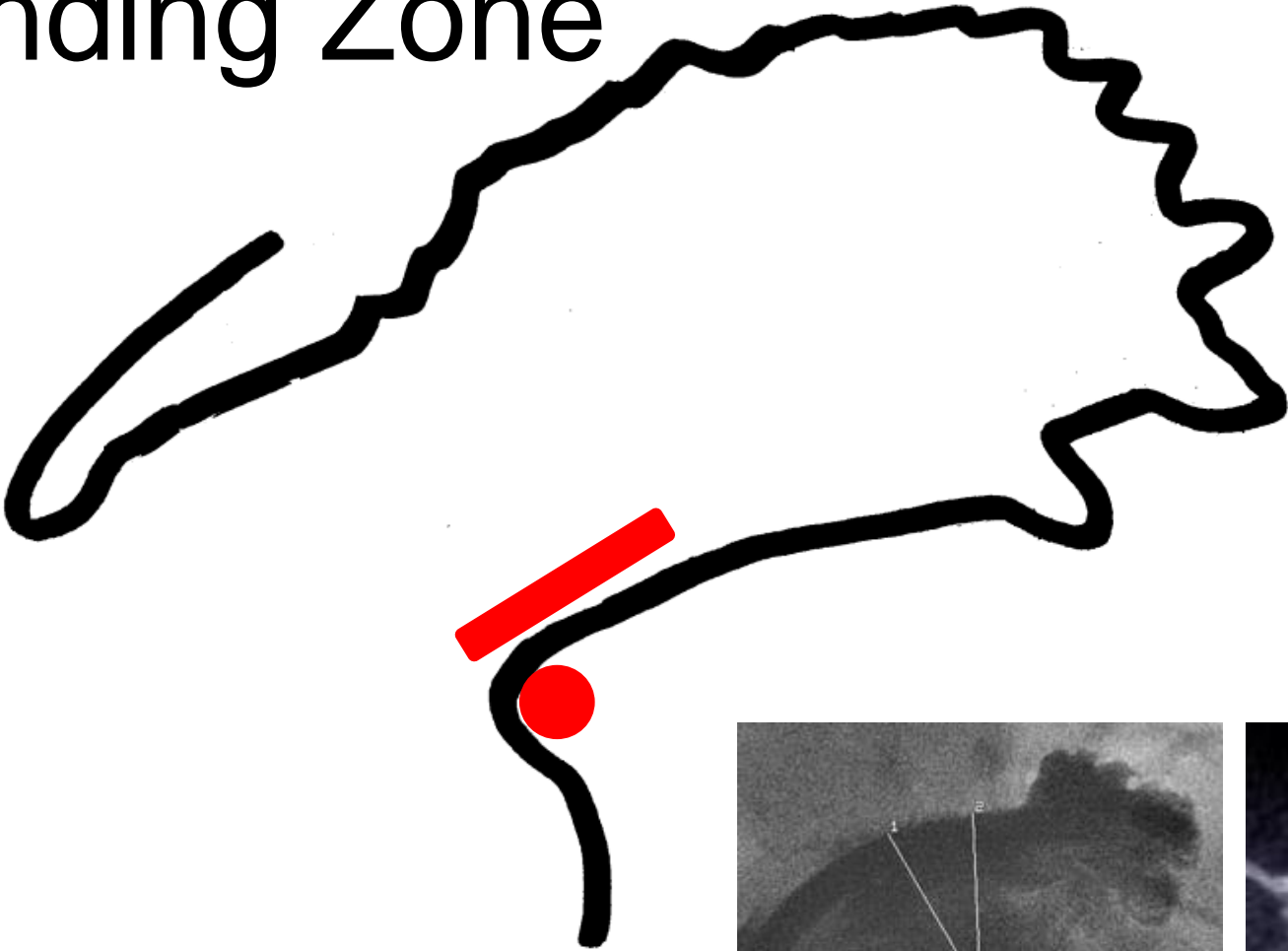
- Good for all types of occluder ...
- ... but not for Lariat
 - Removal of the loop may be impossible



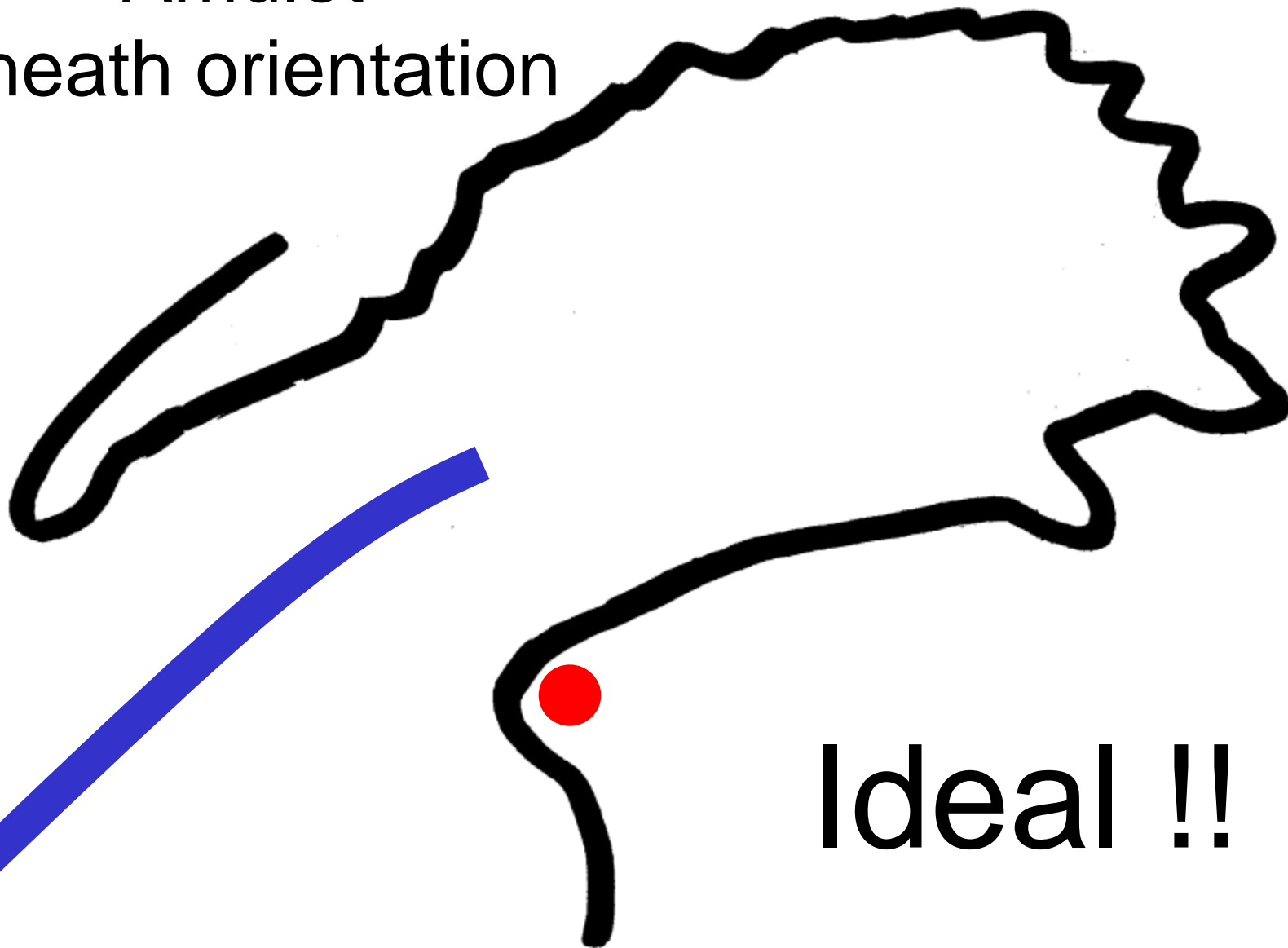
Sheath position

- The sheath should be perpendicular to the LAA ostium
- But Watchman is compared to Amulet more forgiving

Amulet Landing Zone



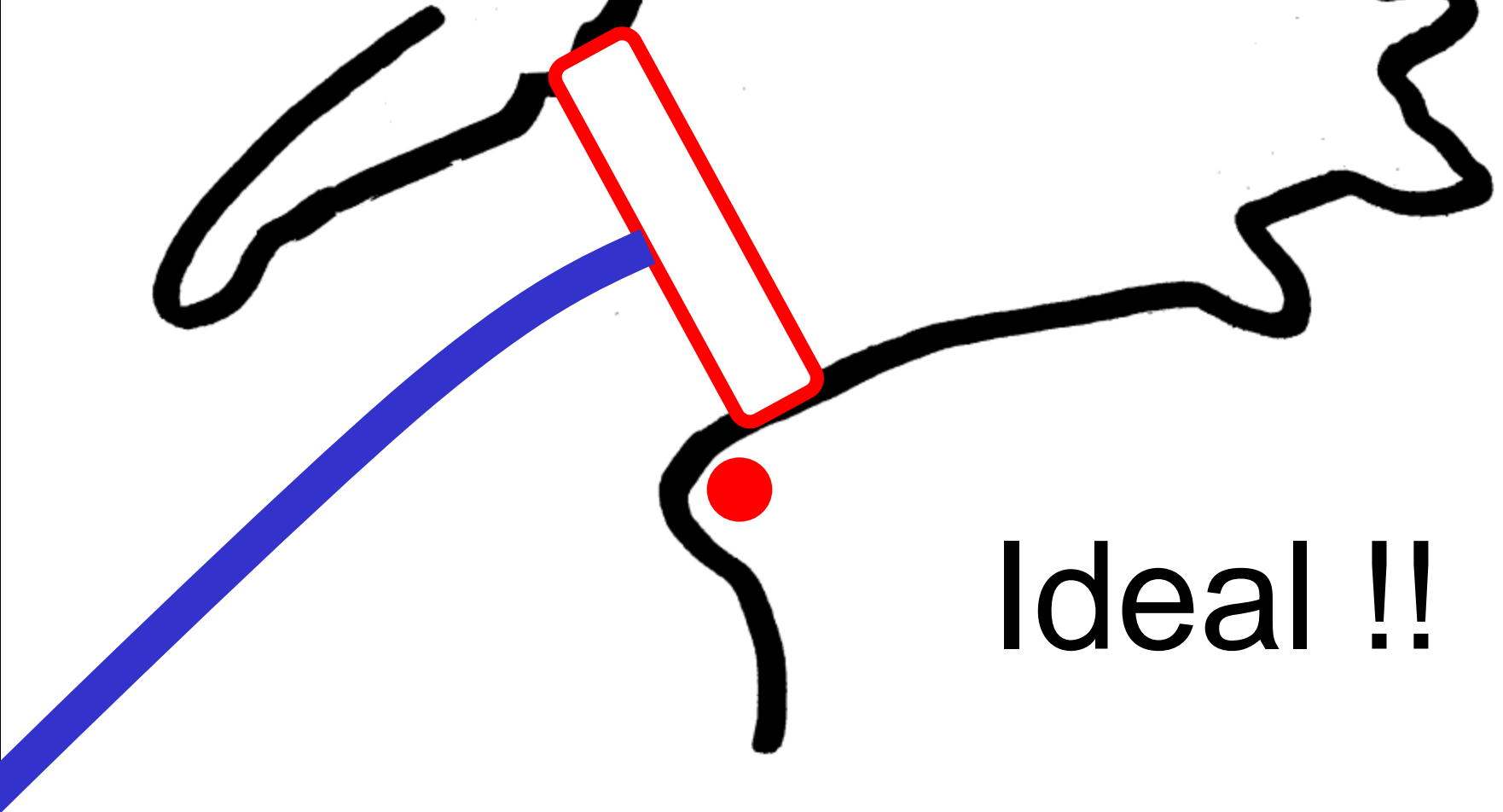
Amulet
Sheath orientation



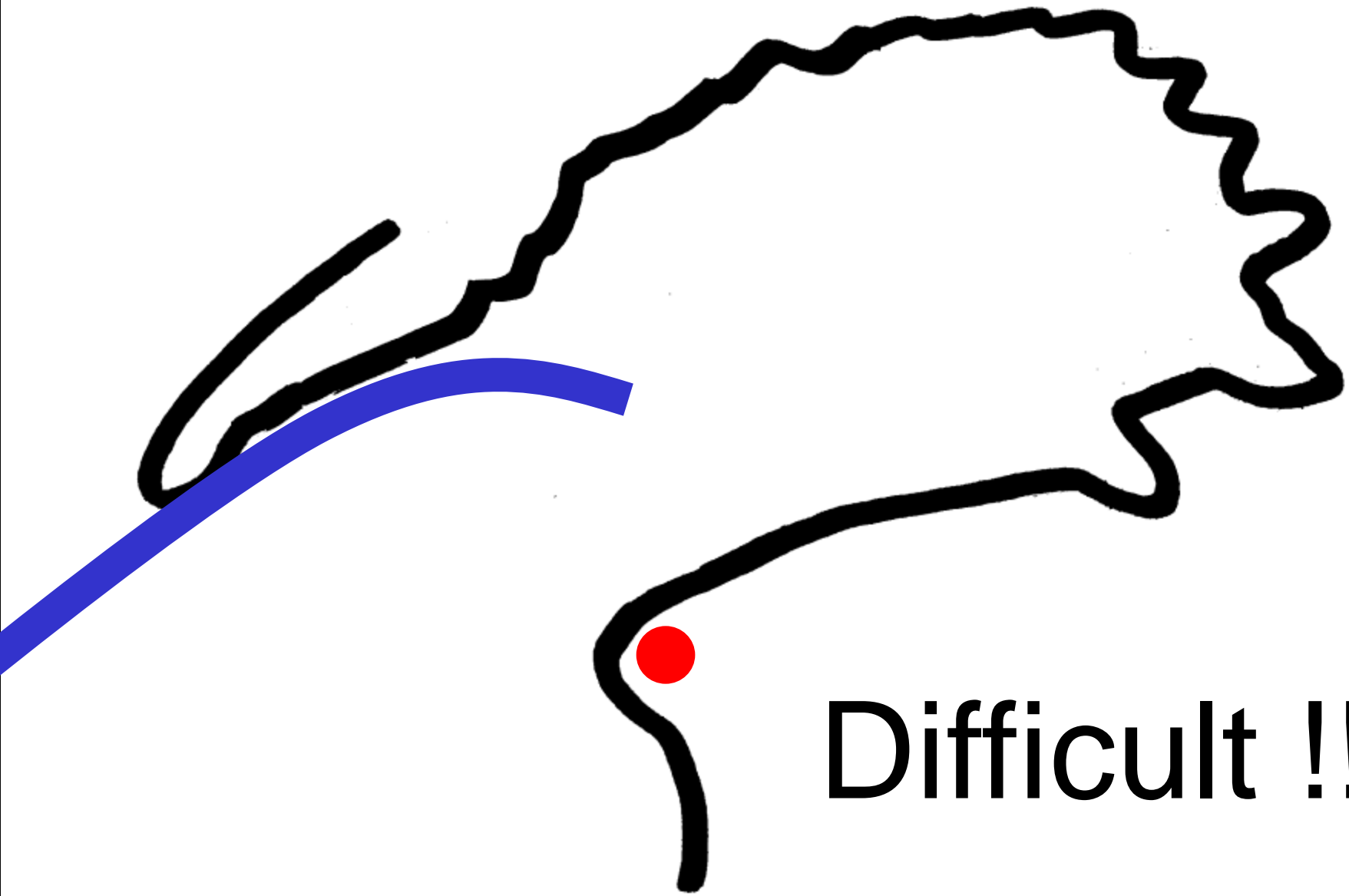
Ideal !!

Amulet

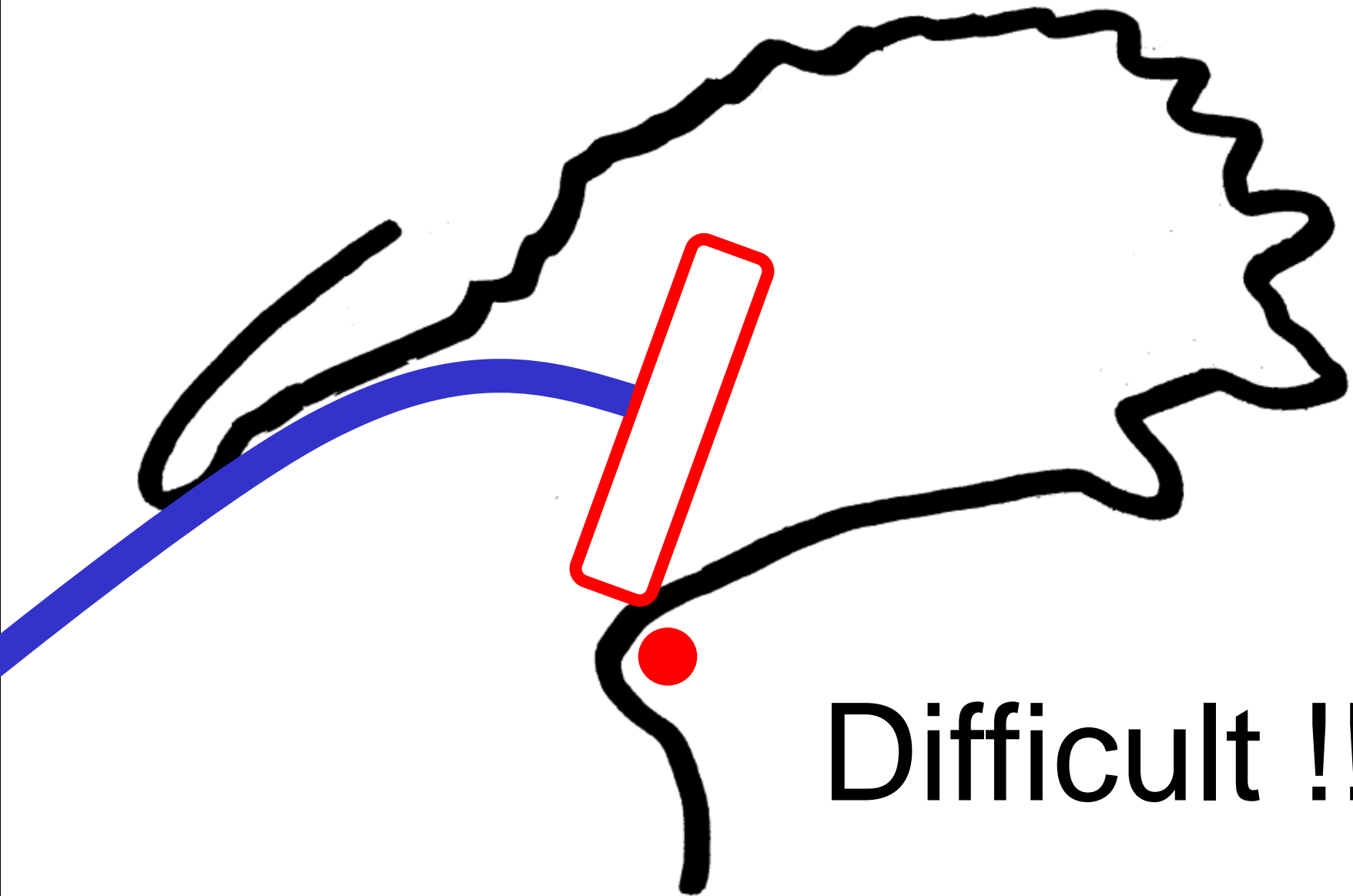
Sheath orientation is
more important



Ideal !!



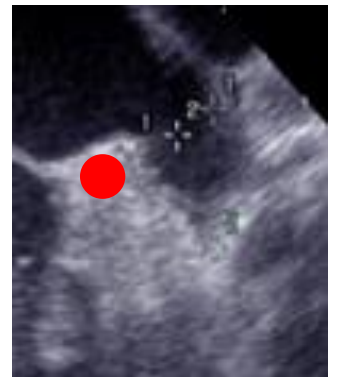
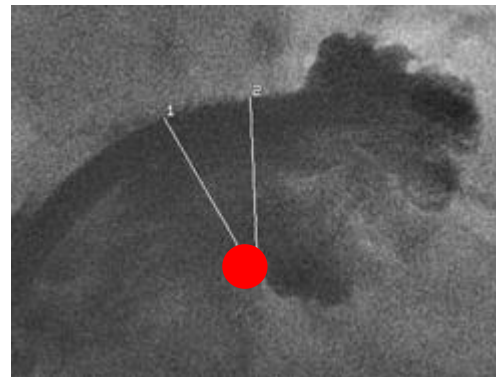
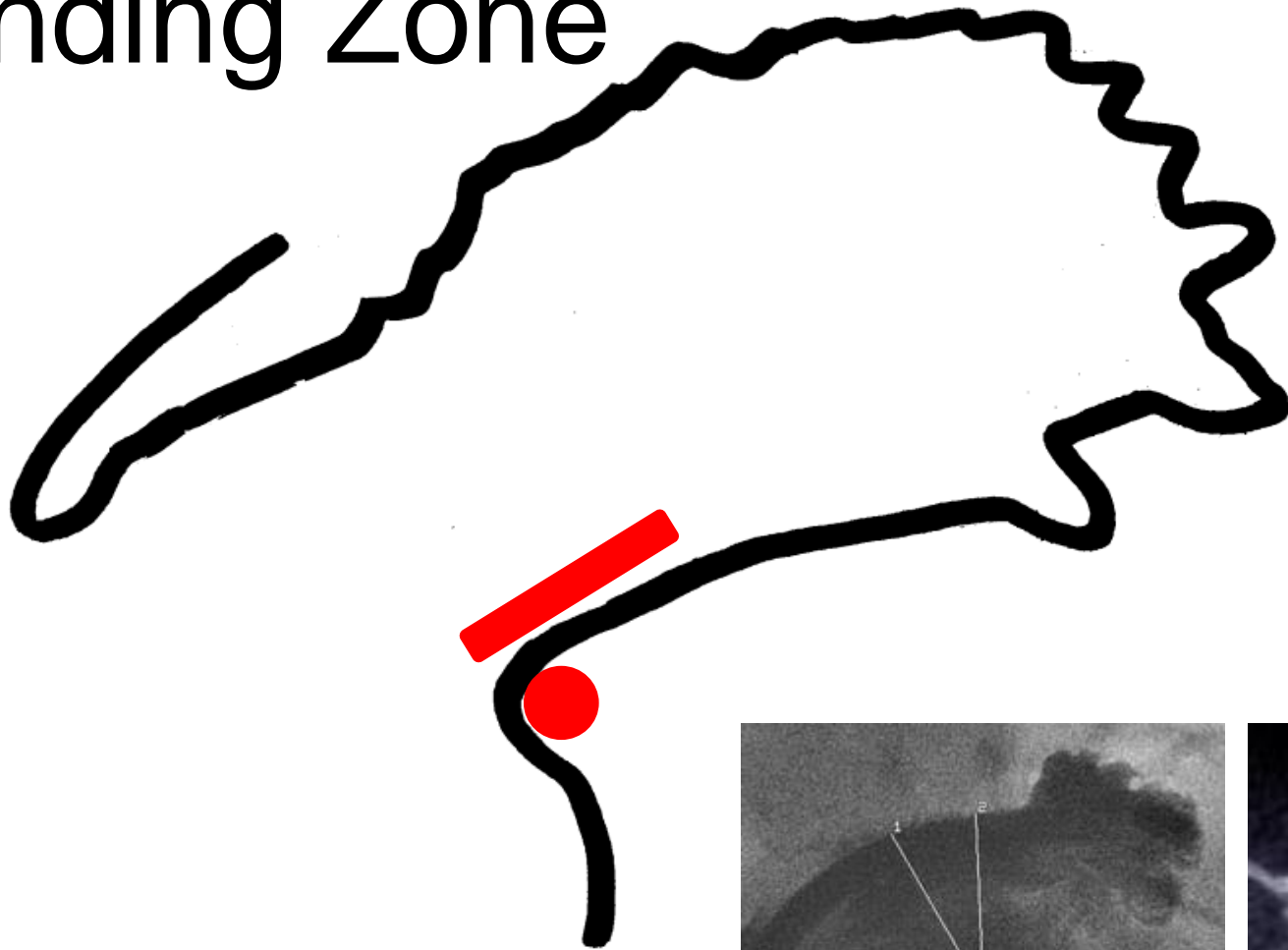
Difficult !!



Difficult !!

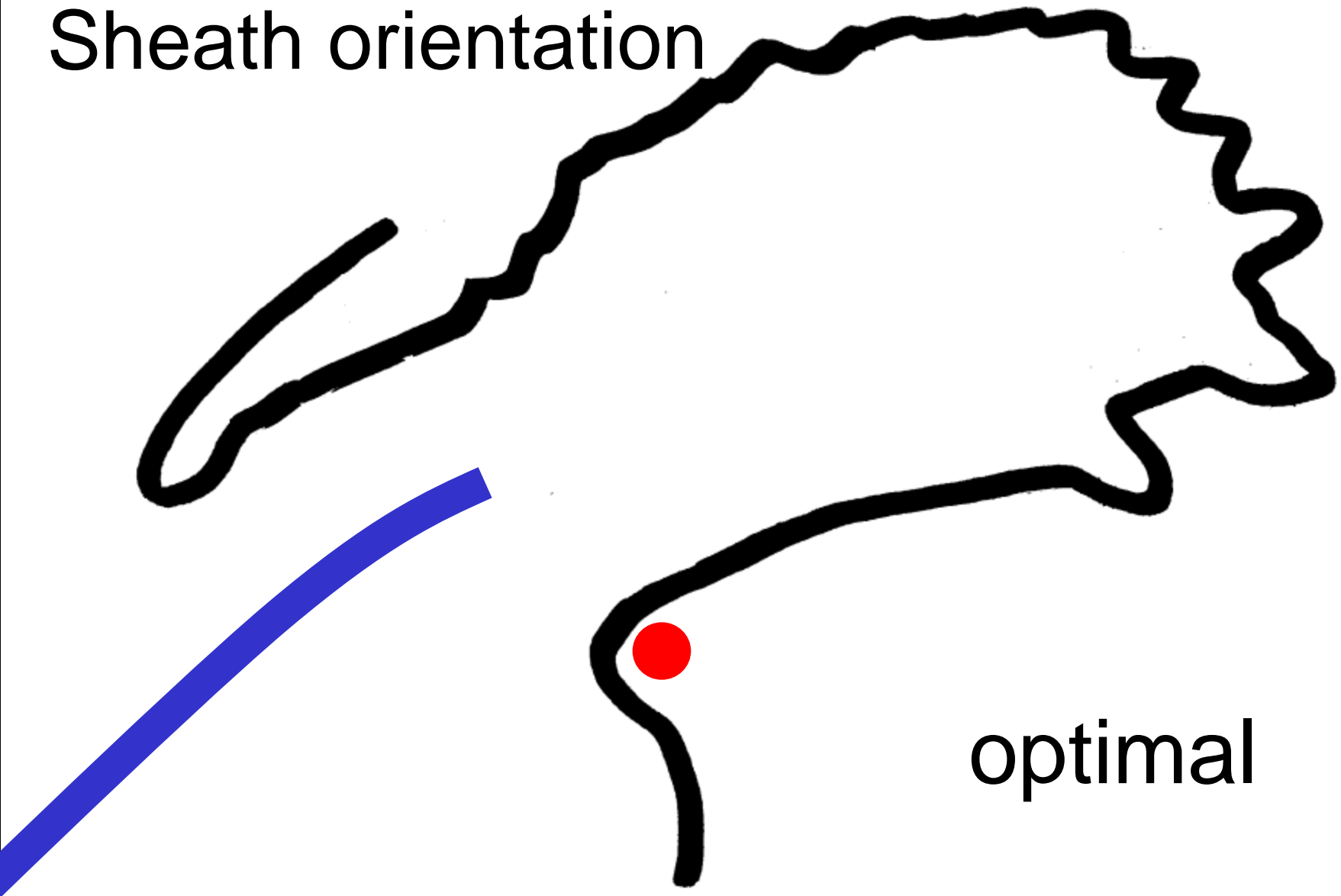
Sheath orientation not
so important with the
Watchman

Watchman Landing Zone

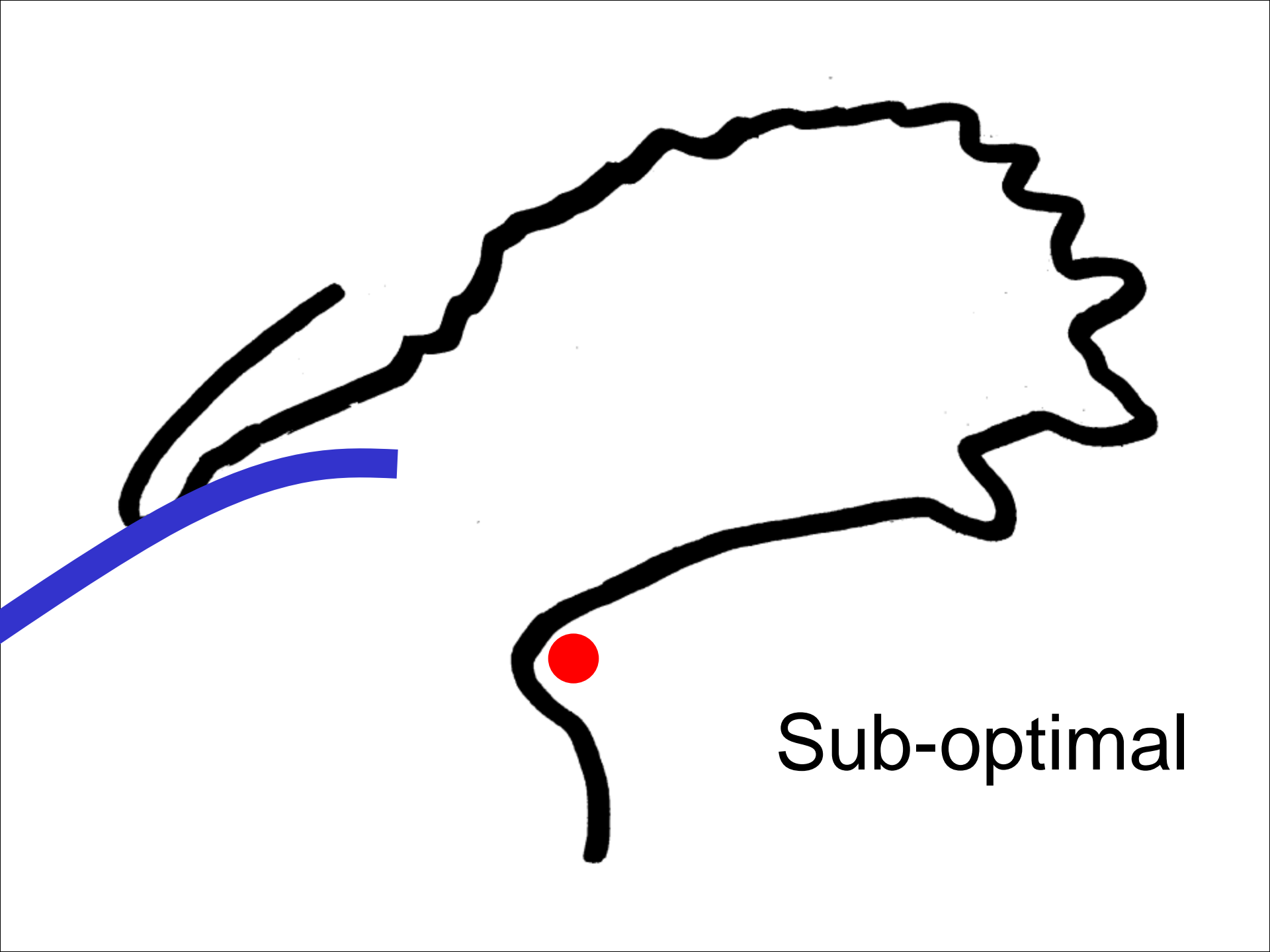


Watchman

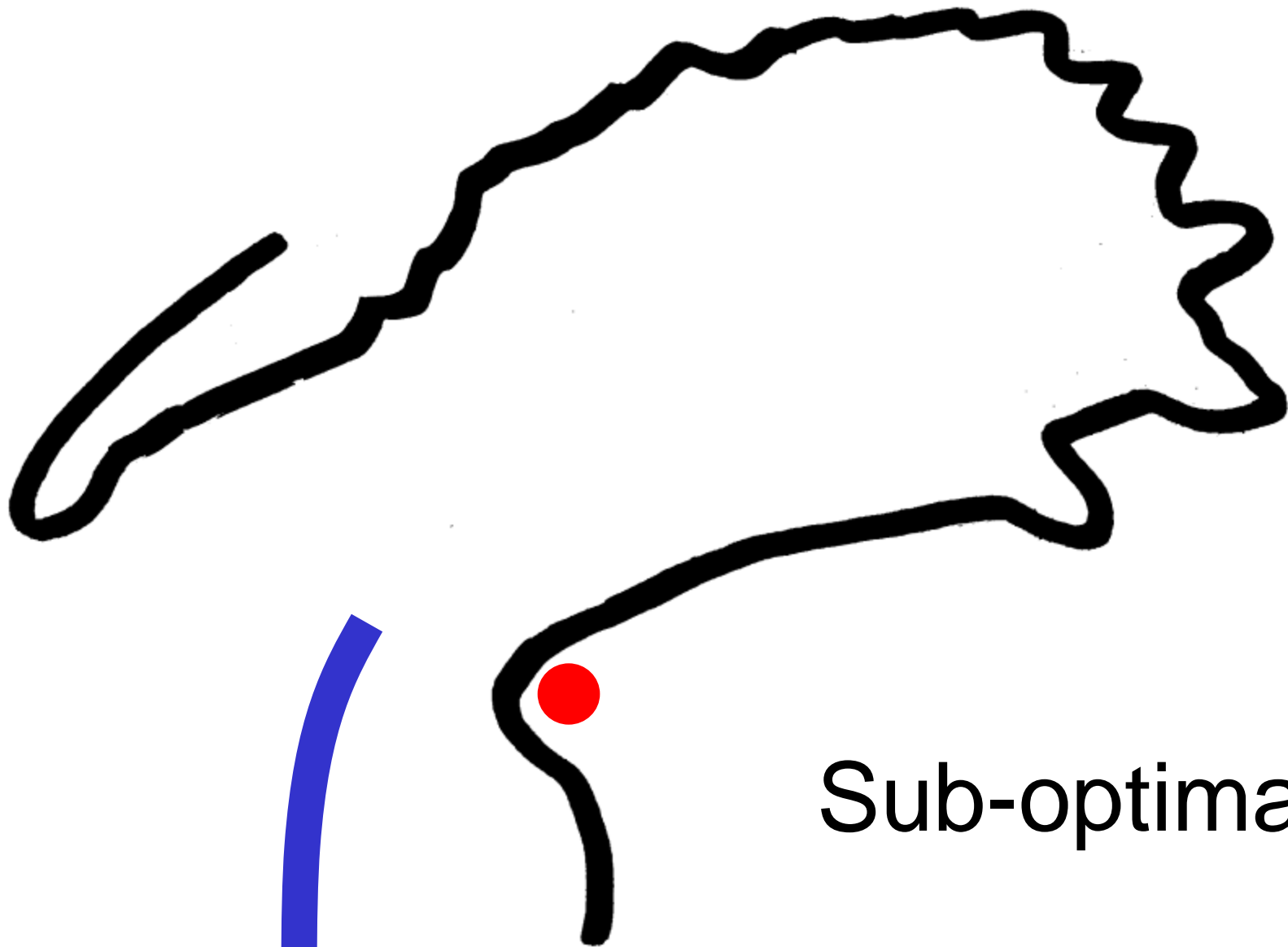
Sheath orientation



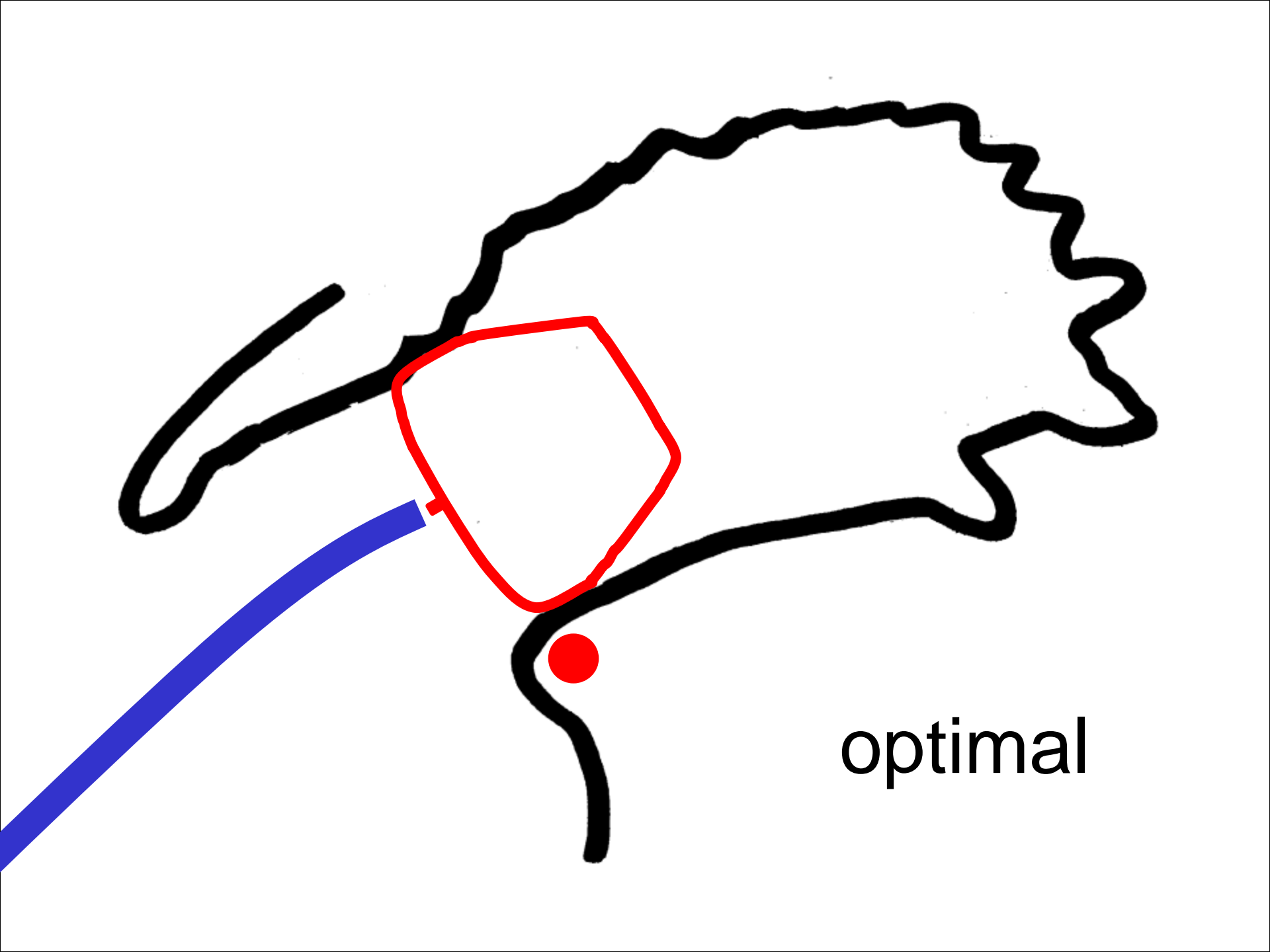
optimal



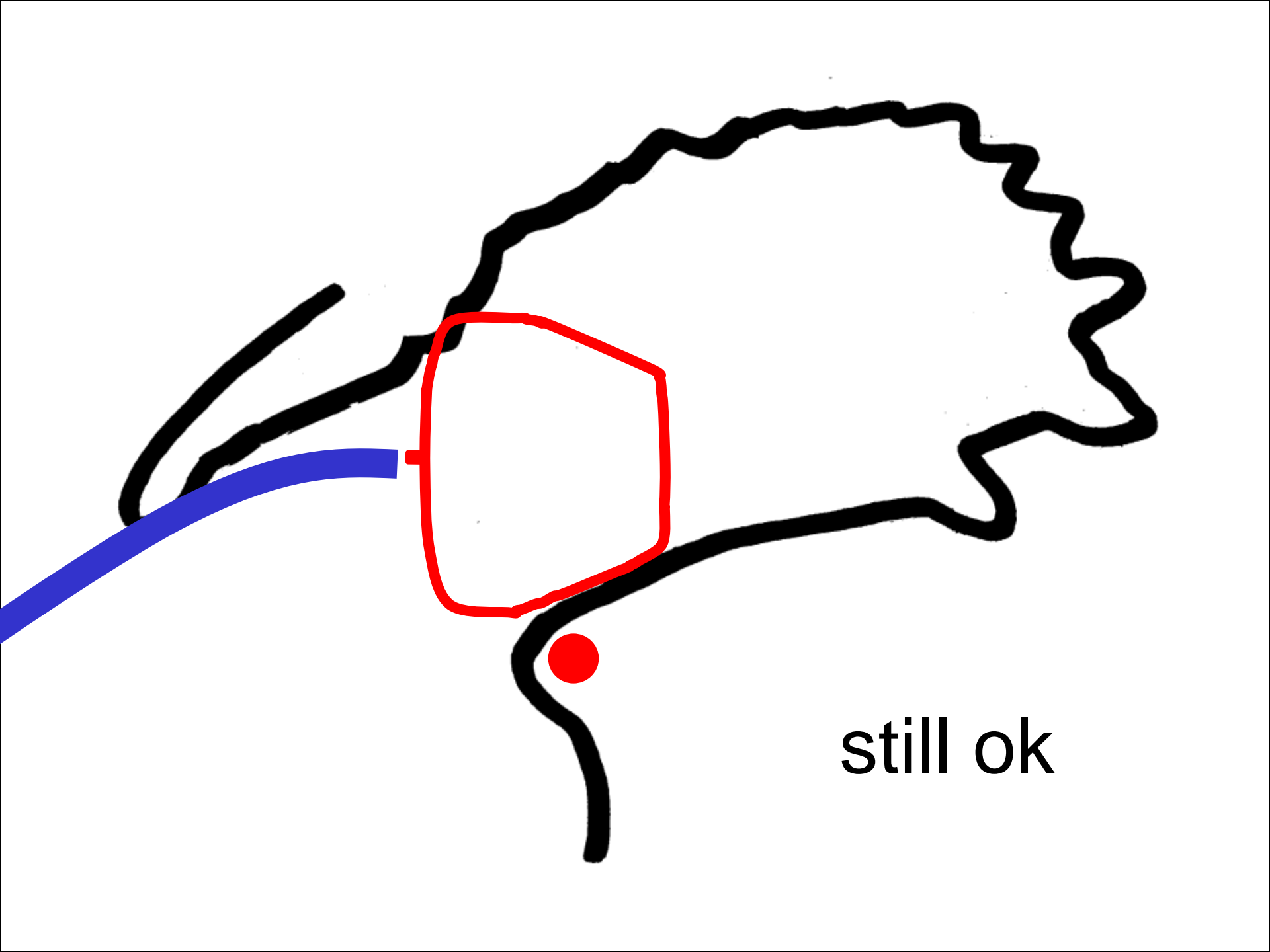
Sub-optimal



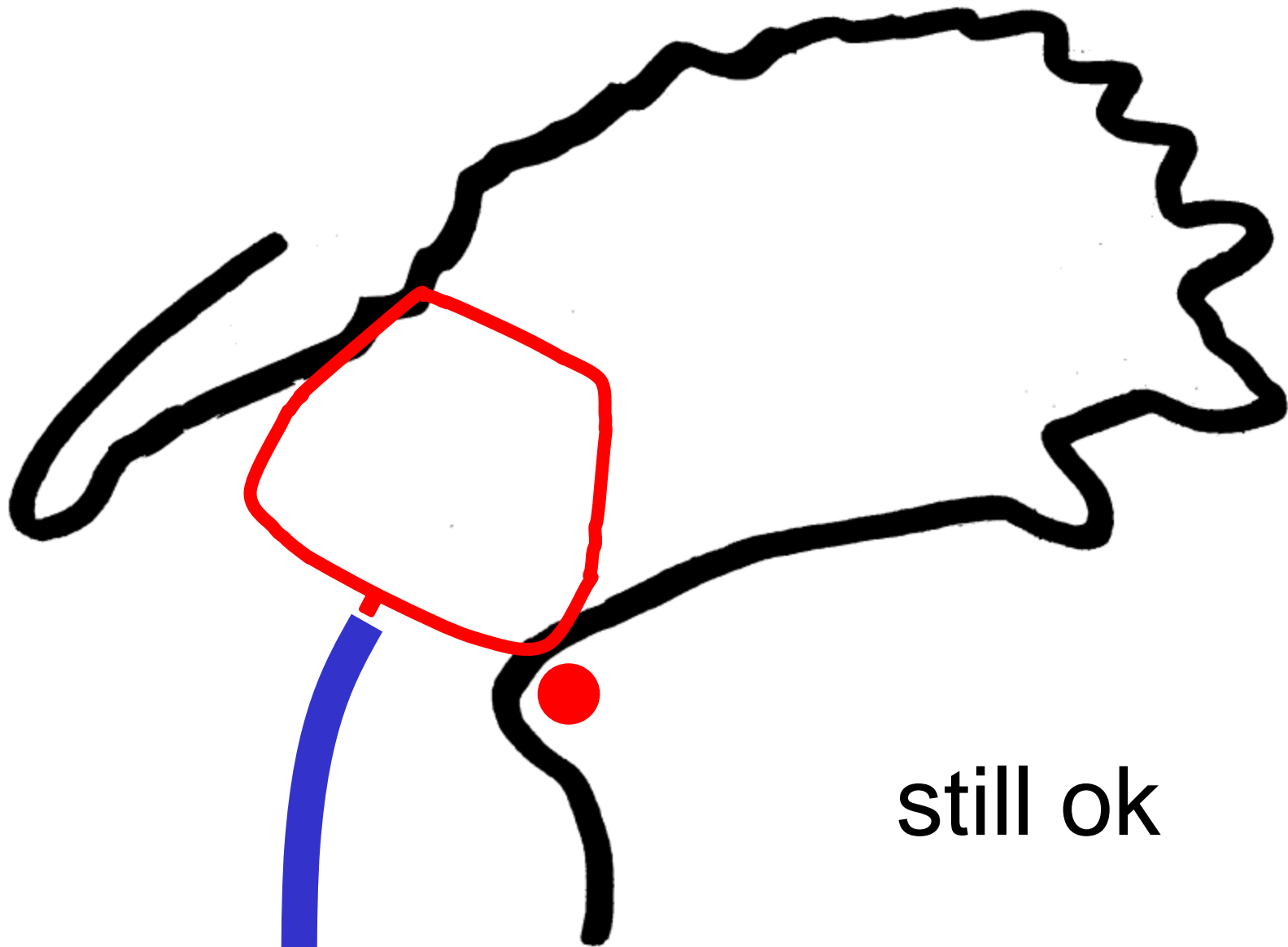
Sub-optimal



optimal



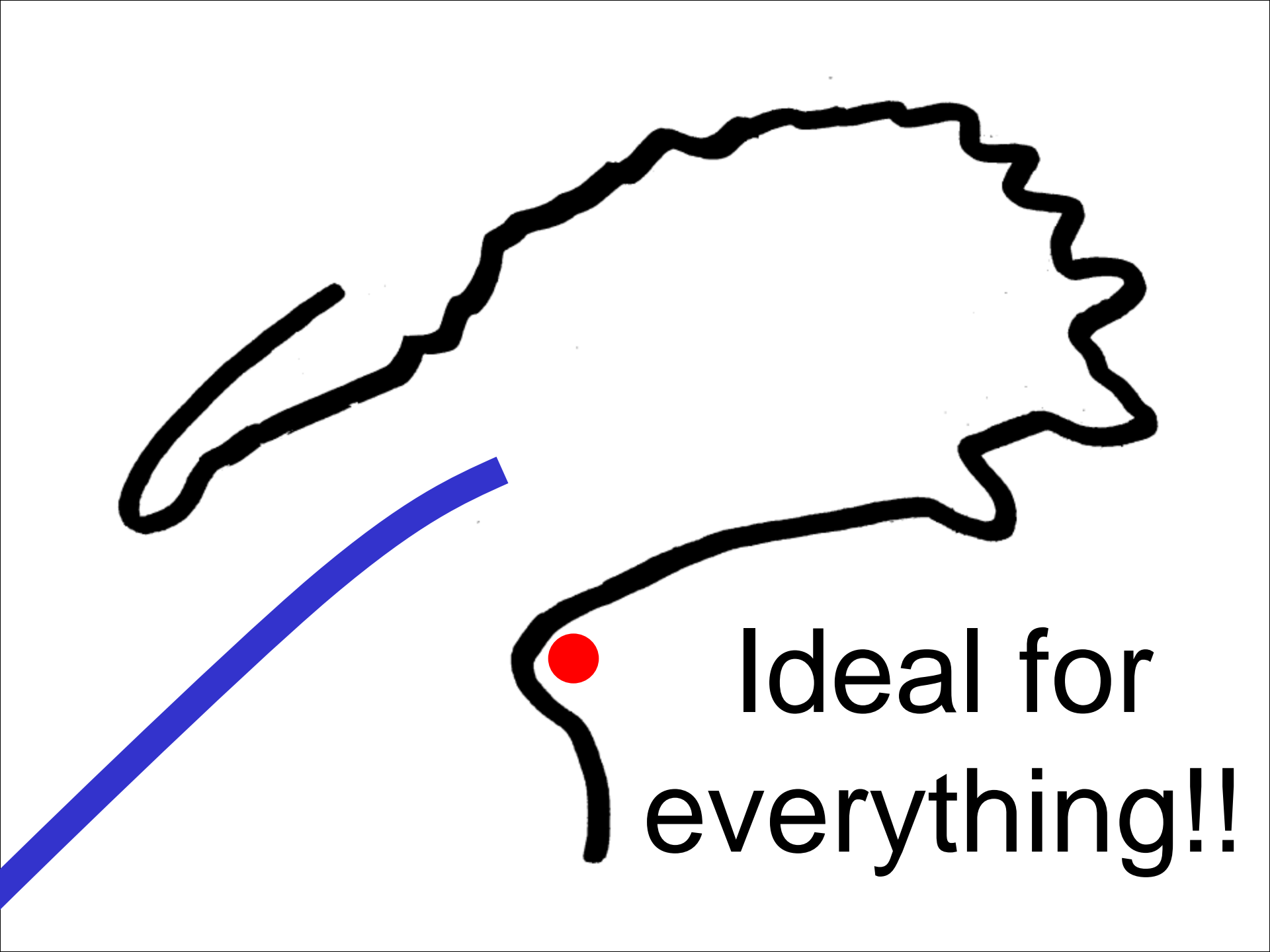
still ok



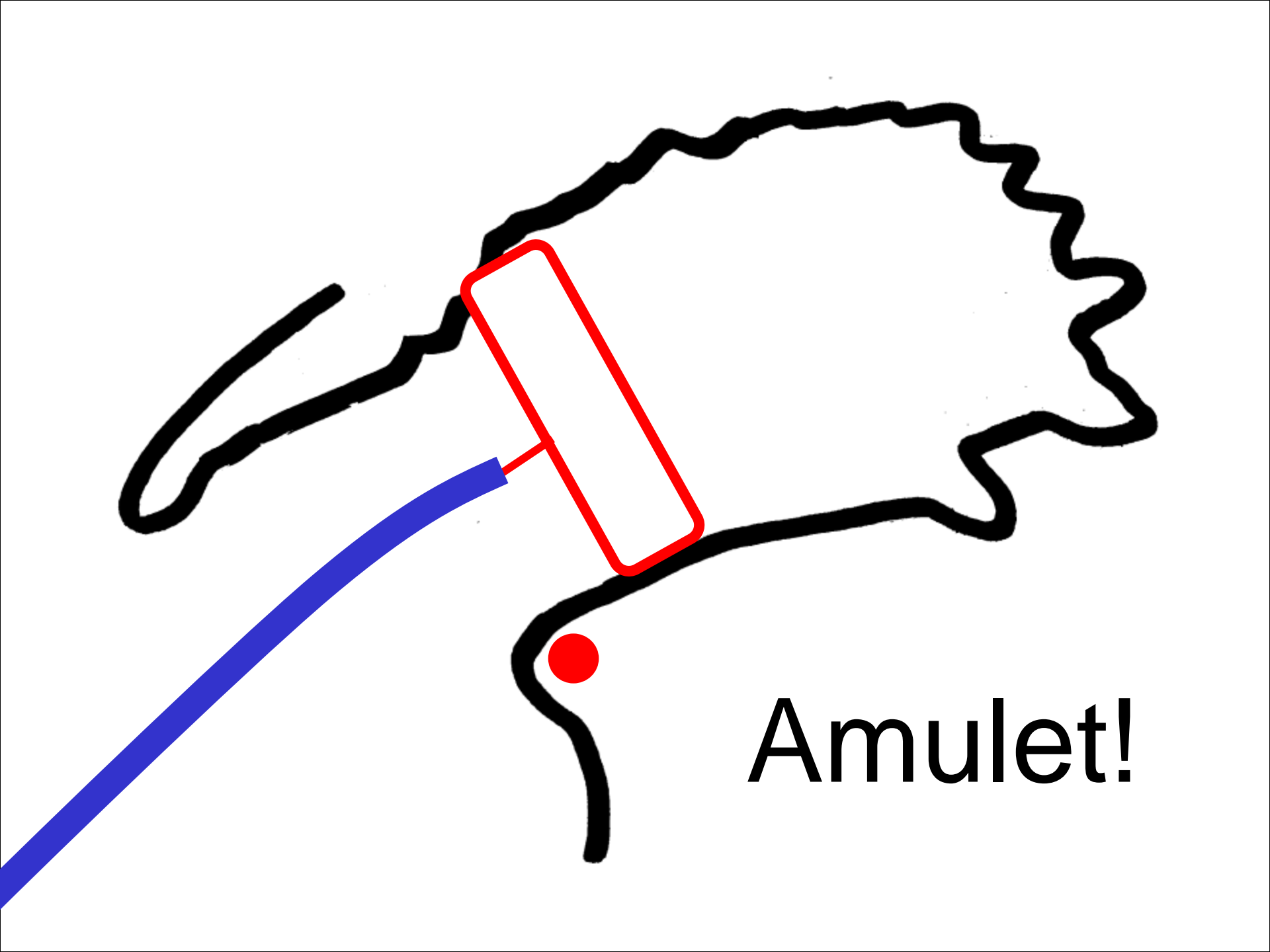
still ok

Amulet requires more than the
Watchman a well defined landing
zone and a perpendicular
orientation of the sheath in
relation to the LAA ostium

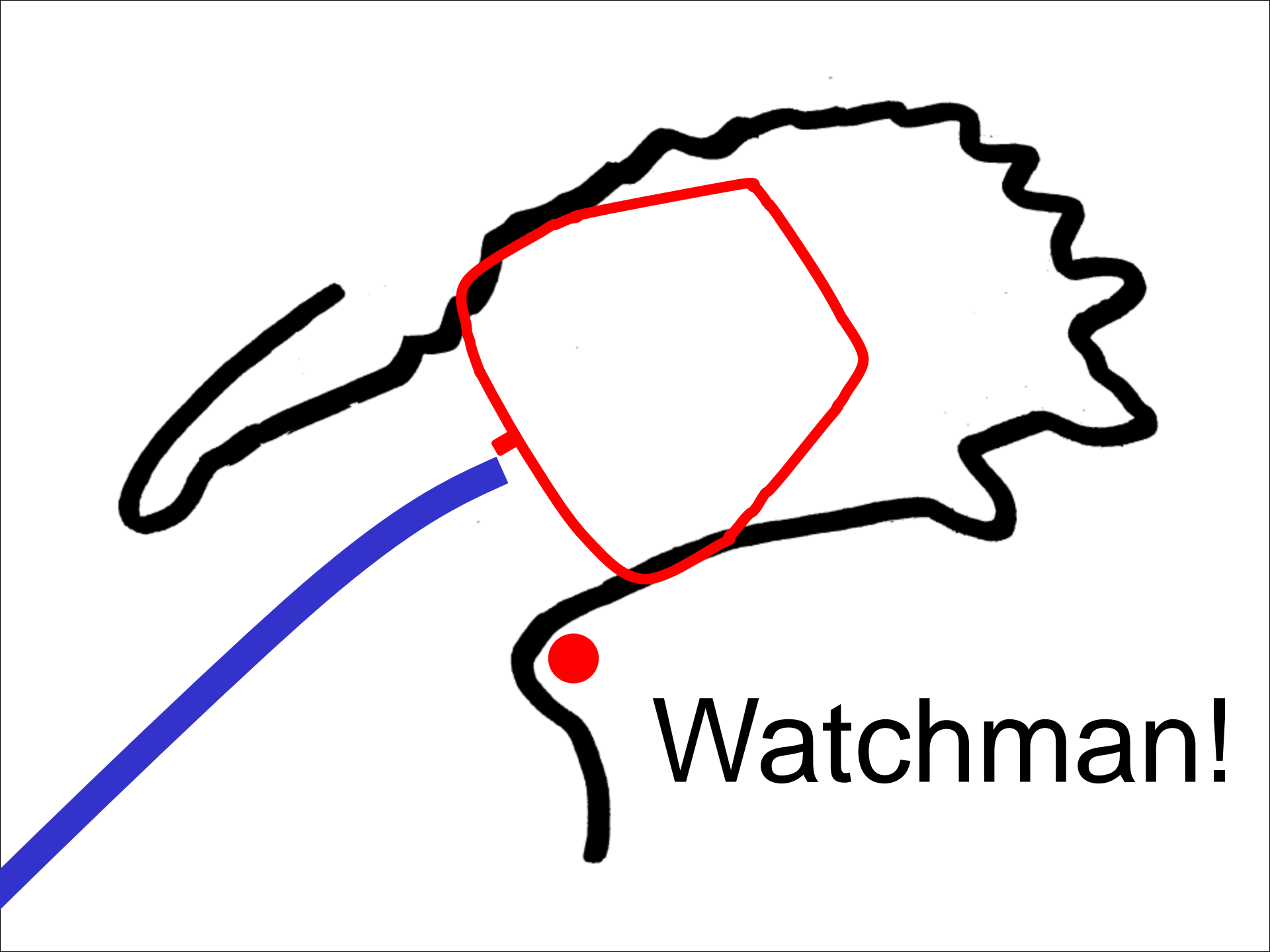
What's about different
LAA shapes?



Ideal for
everything!!



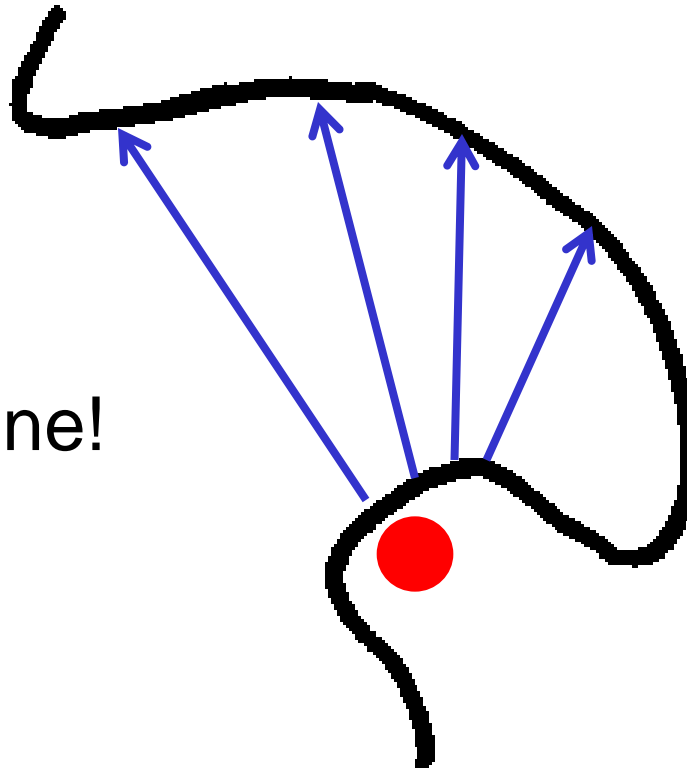
Amulet!



Watchman!

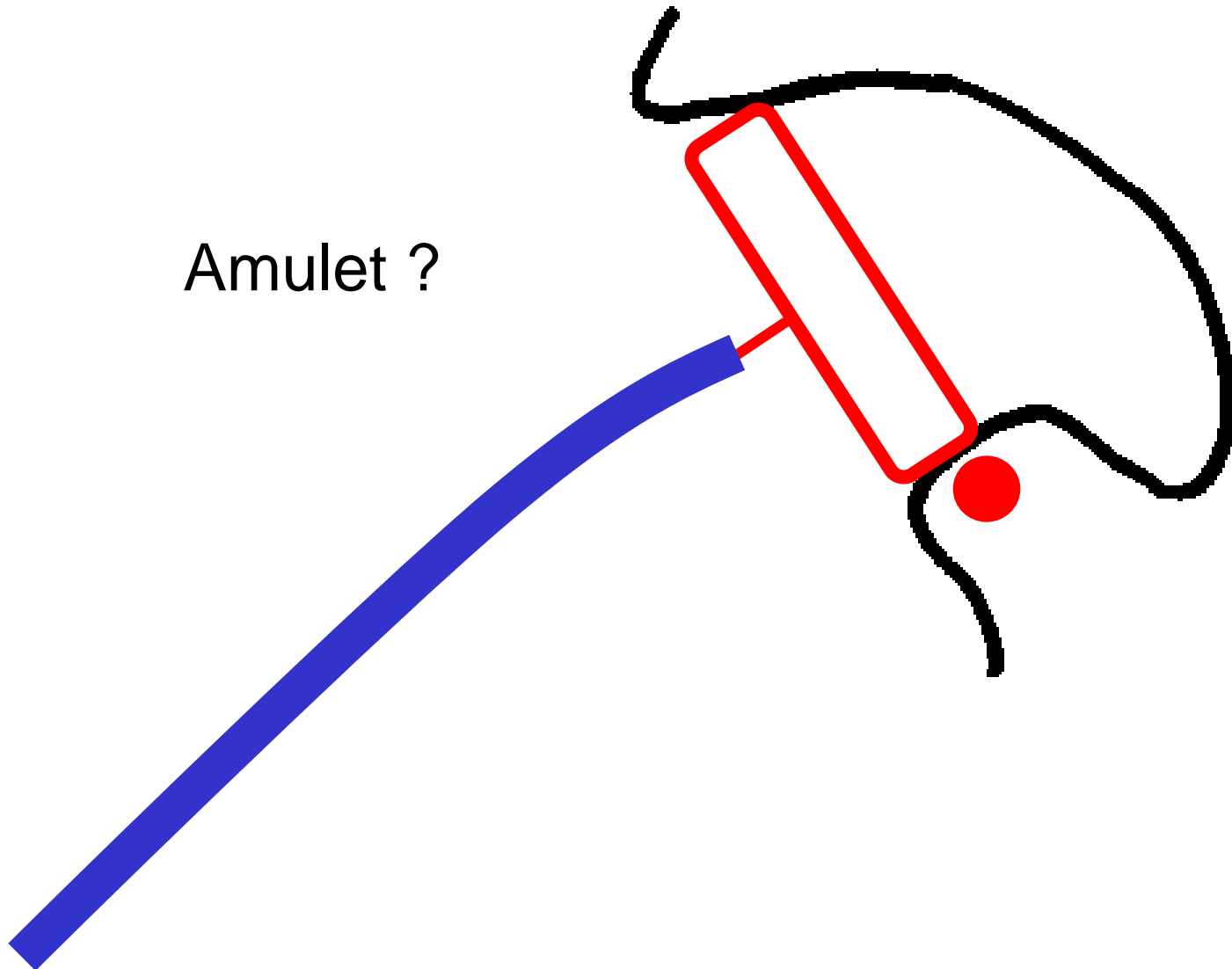
Most common problem:
where is the landing zone?

No good landing zone!



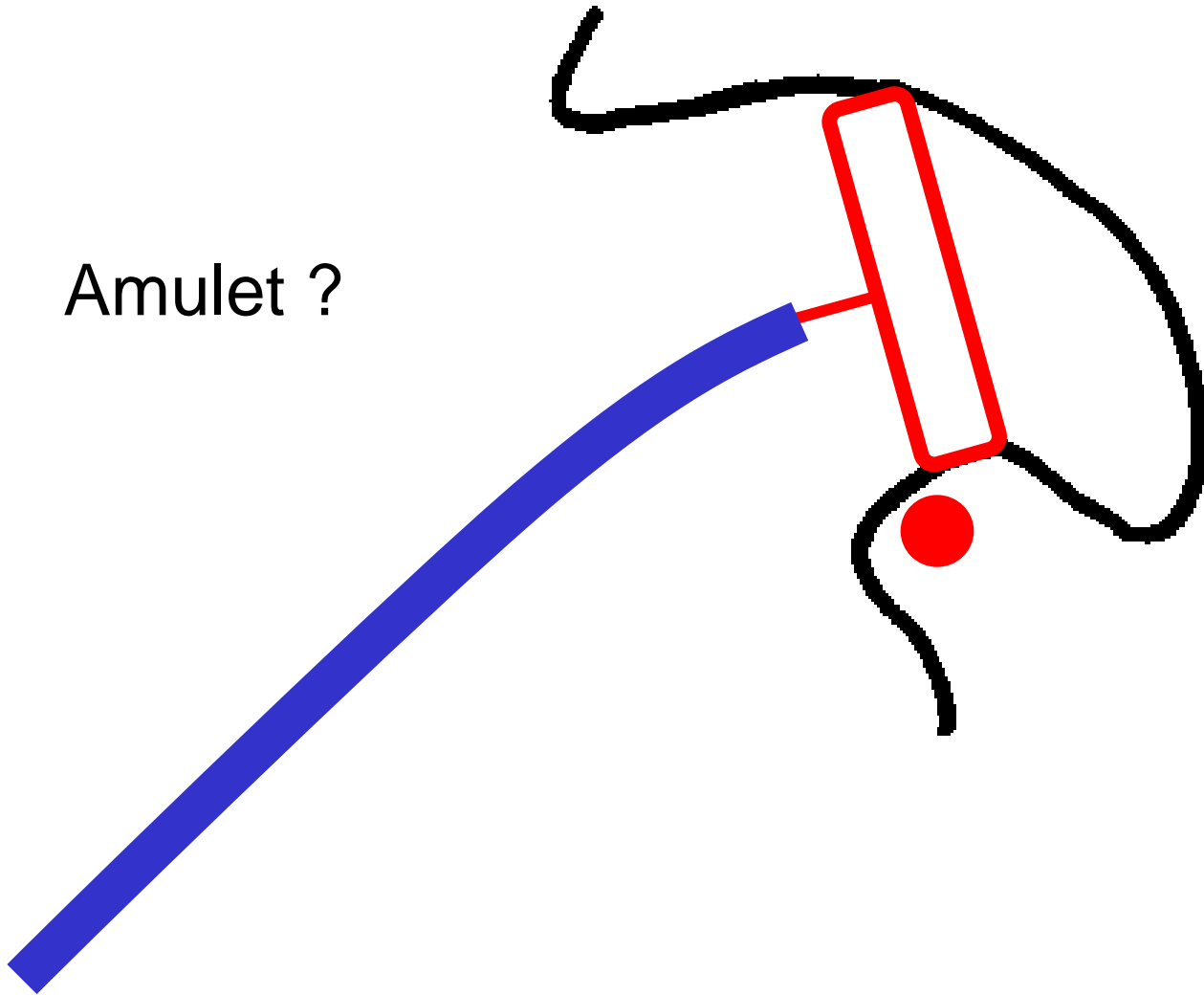
Where is the landing zone?

Amulet ?



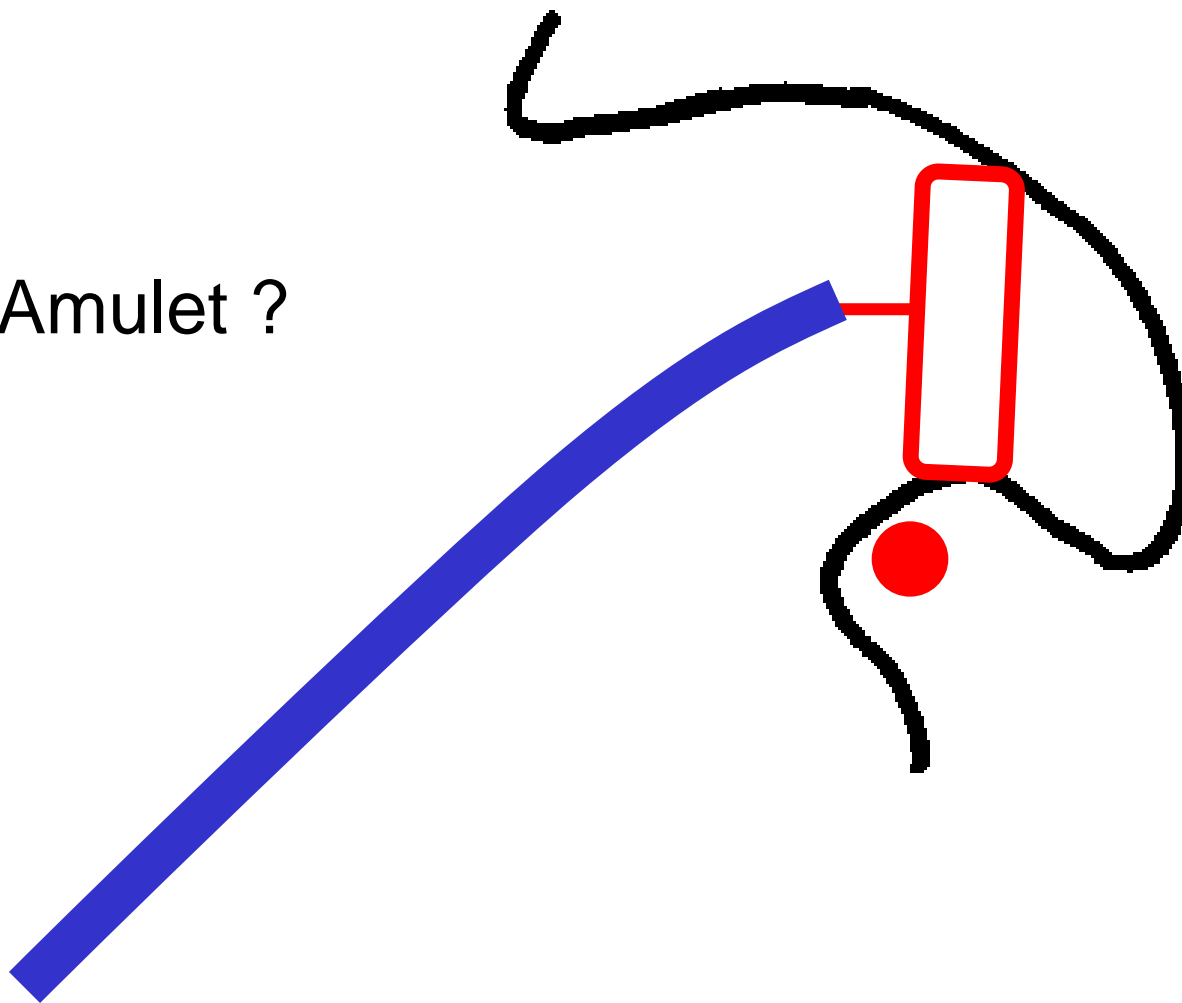
Where is the landing zone?

Amulet ?



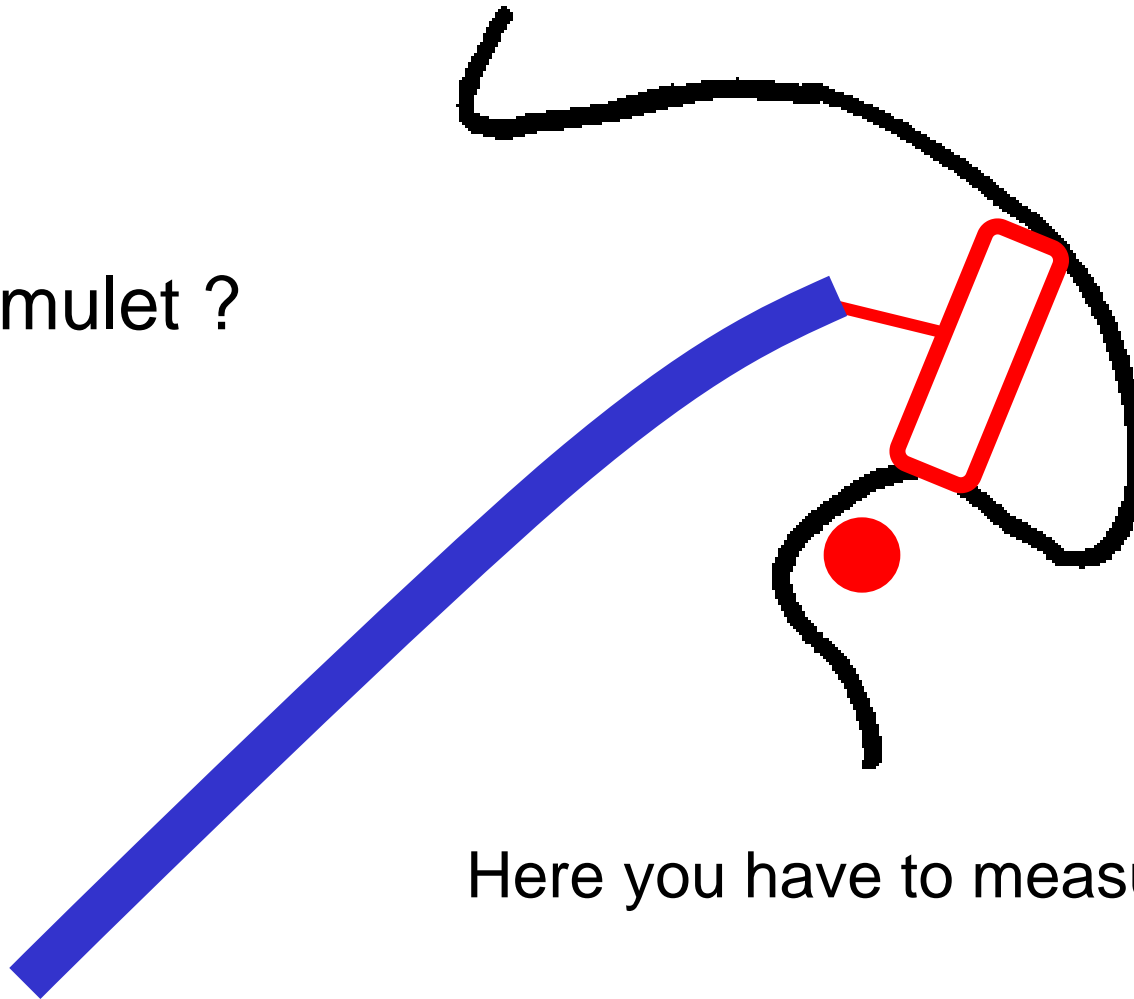
Not as easy as it looks!

Amulet ?



Not as easy as it looks!

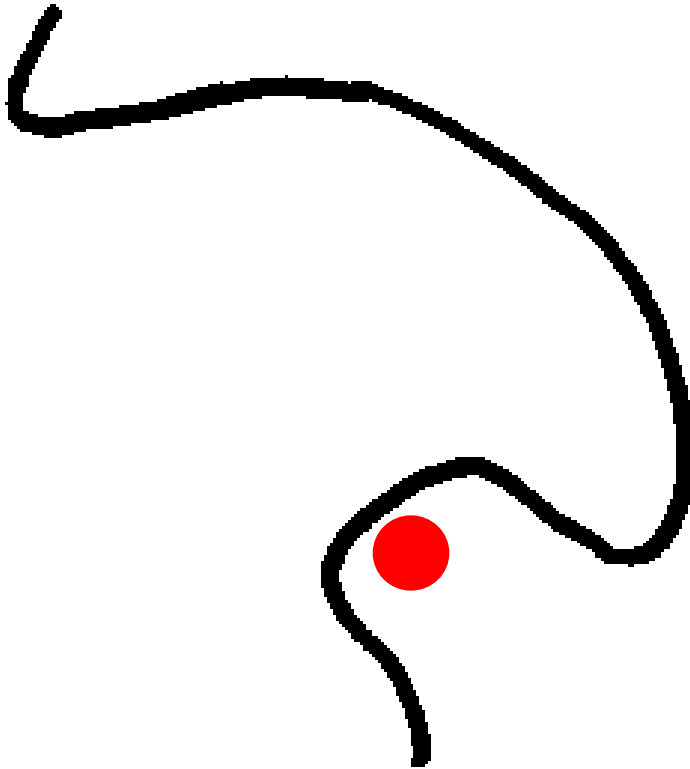
Amulet ?



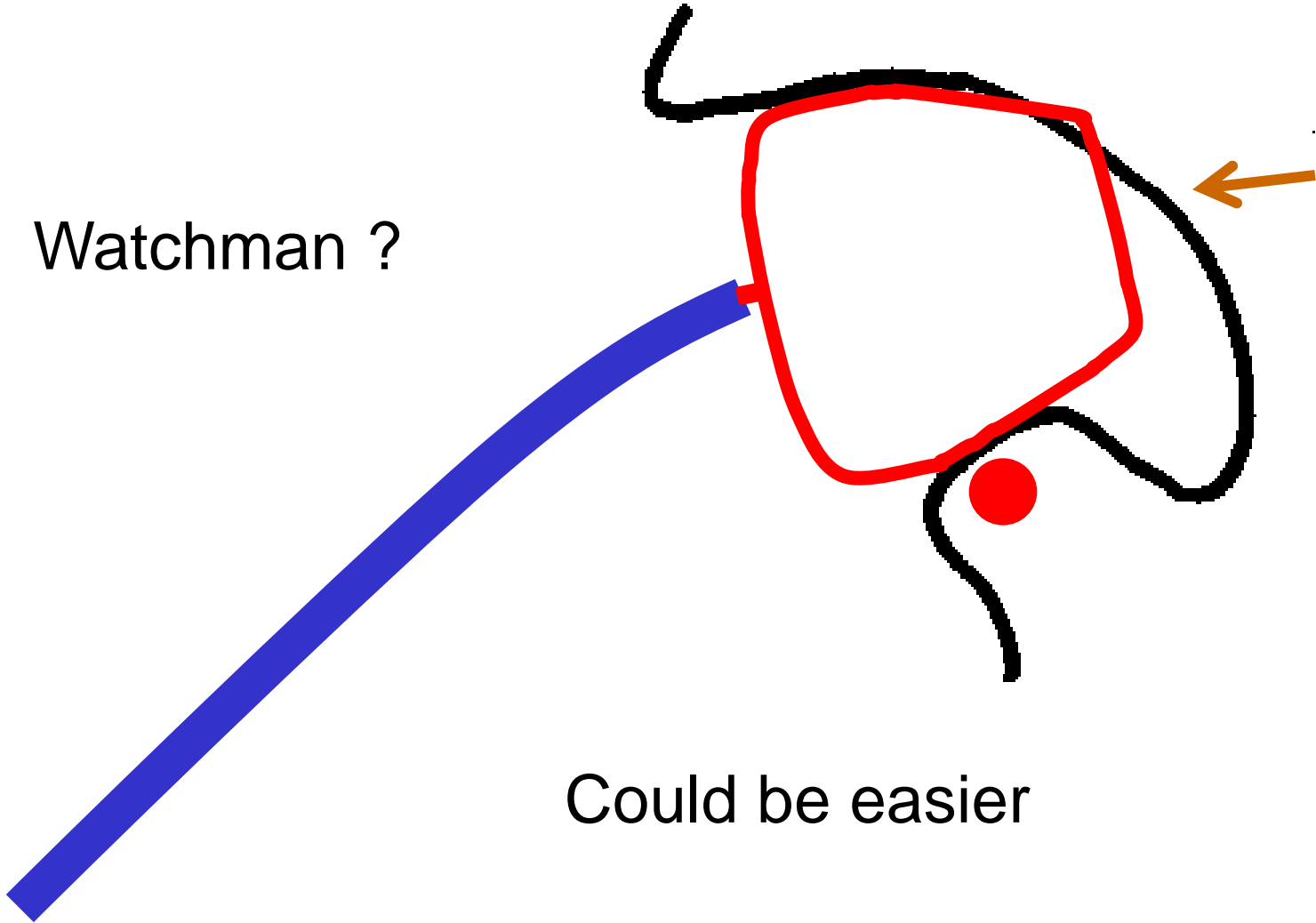
Here you have to measure precisely!

Precisely where you want to place the device

And Watchman ?



Watchman ?



But only if
there is
enough
space!

Could be easier

Other considerations

Watchman vs Amulet

- In case of device embolization it is easier to snare and extract the Watchman than the Amulet
- With Watchman one sheath size fits for all device sizes
 - The sheath can be used for calibration
 - Decision about device size can be made after sheath insertion
- With Amulet no quantitative measurements are needed after device implantation
- That one LAA closure device is effective in stroke prevention does not mean necessarily that all other devices are effective as well
 - Amulet data are looking good but Watchman data are still much more solid
- To compare the safety and efficacy of different devices a randomized study is needed

When to use which device?

- Very short LAA
 - Amulet may be better than Watchman
- Very large LAA (>28mm)
 - Max landing zone for Watchman FLX may one mm larger (up to 32mm)
- Multiple proximal lobes
 - Amulet may be better (short landing zone, umbrella may cover all lobes)
- But if there is a bad angle between delivery system and LAA
 - Watchman may be better
- Patient can not take any blood thinner therapy
 - Lariat better

Thank you!

LIVE CASES

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