In the context of **mechanical thrombectomy** and **acute ischemic stroke (AIS)** treatment, a **retriever** refers to a **medical device designed to remove blood clots** from blocked blood vessels, particularly in large vessel occlusions (LVOs). These devices are used to restore blood flow (revascularization) to the brain in patients experiencing a stroke.

### **Key Definition:** A **retriever** is a minimally invasive endovascular tool, typically introduced through a catheter, that captures and extracts thrombi (blood clots) from the occluded arteries, primarily in the brain, during mechanical thrombectomy procedures.

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### **Types of Retrievers**: 1. **Stent Retrievers**:

1. Made of a self-expanding mesh (usually nitinol) that traps the clot within its structure.
2. Examples: Solitaire, Trevo, EmboTrap.
3. Mechanism: After deployment in the clot, the stent retriever expands, engages the thrombus, and is retracted to remove the blockage.

2. **Aspiration Catheters**:

1. Large-bore suction devices used to aspirate the clot.
2. Often used alone or in combination with stent retrievers.
3. Examples: Penumbra system, Sofia.

3. **Adjustable Retrievers**:

1. Innovative devices like Tigertriever allow real-time adjustment to better fit the vessel size and clot.

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### **Functionality in Stroke Care**: - **Primary Goal**: Remove the clot causing the stroke to restore cerebral blood flow and prevent further brain damage. - **Process**:

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1. The device is introduced via a catheter through the femoral or radial
artery.
2. It is navigated to the site of the occlusion in the cerebral artery.
3. The clot is captured (via stent retriever or aspiration) and then
withdrawn.
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### **Key Characteristics of Retrievers**: - **Material**: Nitinol (a flexible and durable metal alloy) is common due to its shape memory and biocompatibility. - **Recanalization Rates**: Effectiveness is measured by how often and how completely blood flow is restored. - **Safety**: Complication rates, such as hemorrhage or vessel injury, are closely monitored.

Retrievers have revolutionized stroke treatment, enabling rapid intervention and improving outcomes for patients with acute ischemic stroke.