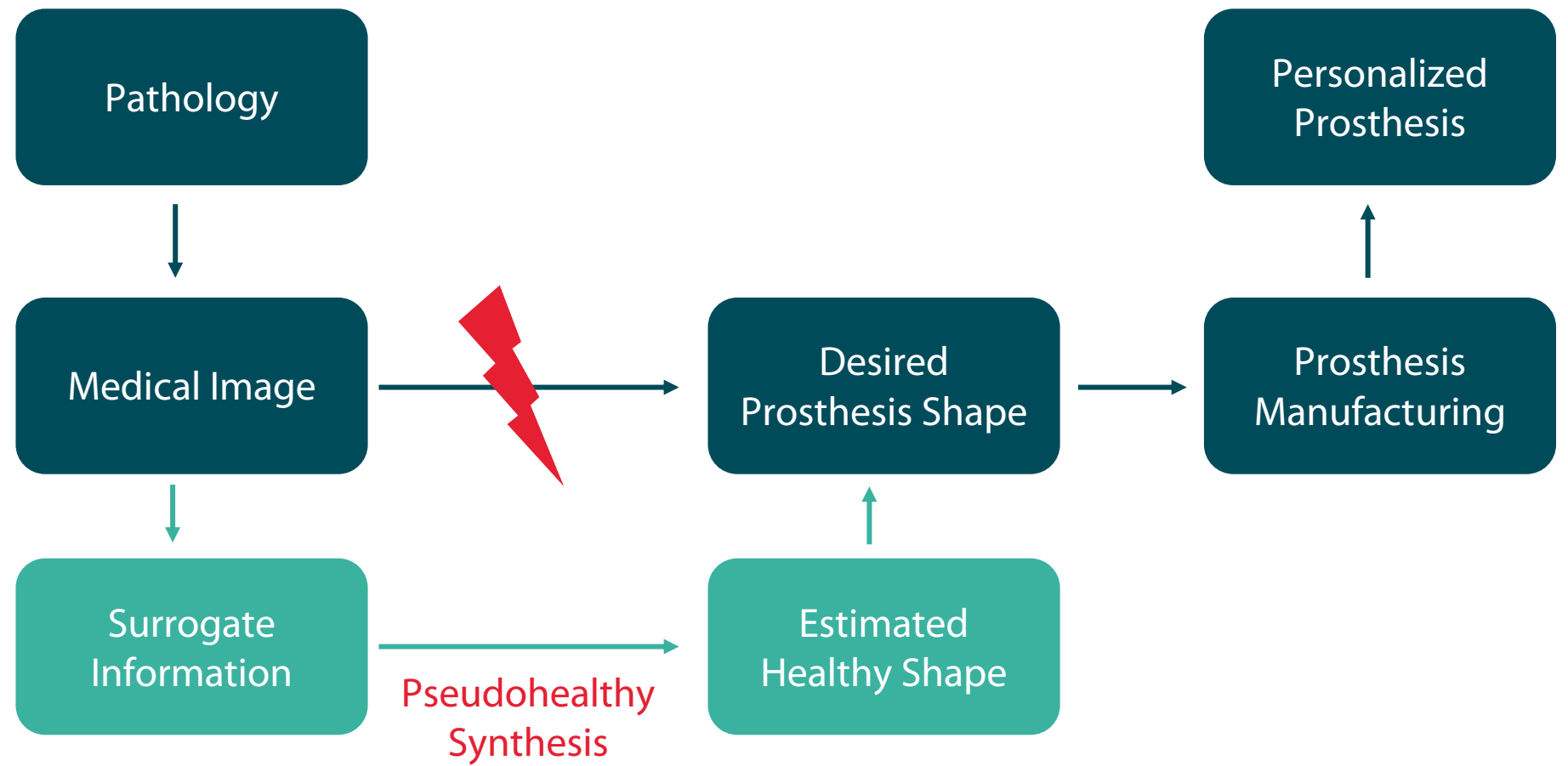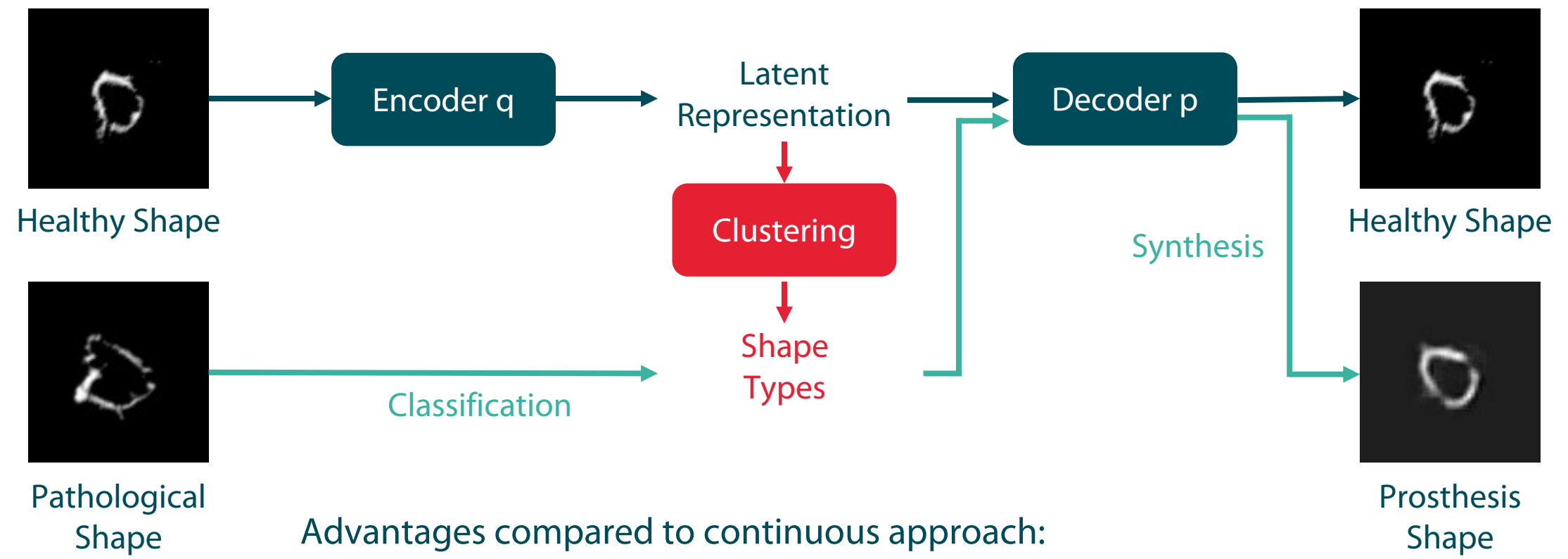# Pseudohealthy Synthesis for Personalized Prosthesis Shaping

- **Aim:**
Personalization of cardiovascular prosthesis shapes

- **Problem:**
Medical image shows pathological state

- **Solution:**
Estimate healthy shape from medical image

Proposed Approach: Discrete Pseudohealthy Synthesis:

Advantages compared to continuous approach:

- Easily applicable in clinical setting, lower costs, no regulatory issues
- Implicitly constrained to avoid unrealistic predictions

Results:

- Evaluated on a data set of ultrasound images of ex-vivo porcine aortic roots (n=24) [Hagenah et al. 2016]
- Healthy and pathological states are known for each sample
- Identified shape types are realistic and complementary
- Qualitative analysis reveiled promising results
- Discrete approach quantitatively outperformed continuous prediction method [Hagenah et al., 2019]

Conclusion:

- Method not limited to cardiovascular prosthesis
- Promising approach to bring personalized prosthetics into clinical application