

Test your surgical skill

# Heat generation during drilling

## Tasks

- 1 Observe the difference between a sharp and a blunt drill bit
- 2 Drill hole through both bone cortices using blunt or sharp drill bits, or K-wire, with the assistance of the appropriate drill sleeve
- 3 Leave drill bit in place with tip sticking out
- 4 Observe on the screen, how the temperature develops
- 5 Repeat steps 1–4 with different drill bits or K-wires and compare results

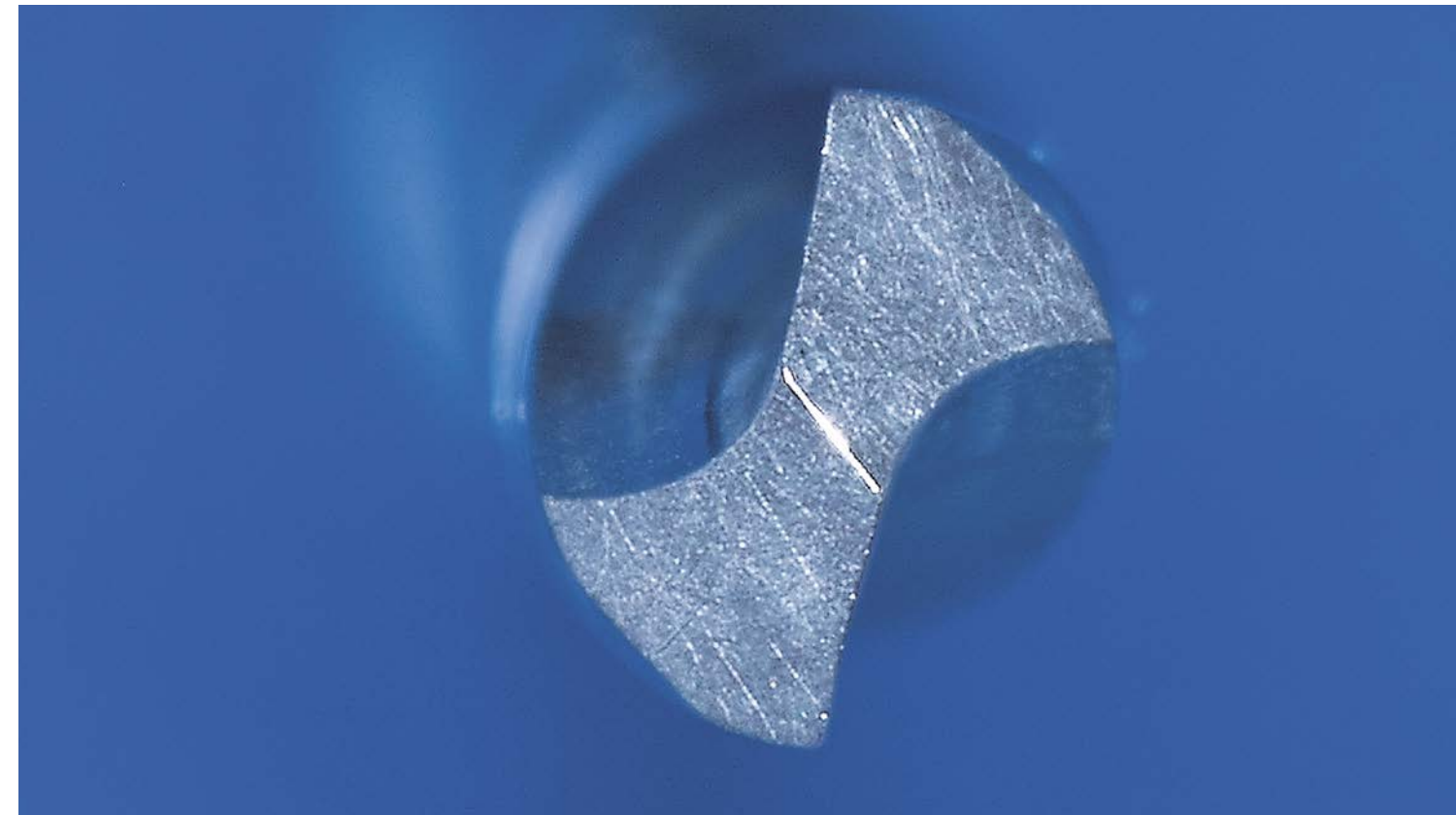
## Learning outcomes

- Learn to differentiate between sharp and blunt drill bits
- Predict heat distribution in bone cortex
- Recognize and compare results from blunt or sharp drill bits or K-wires

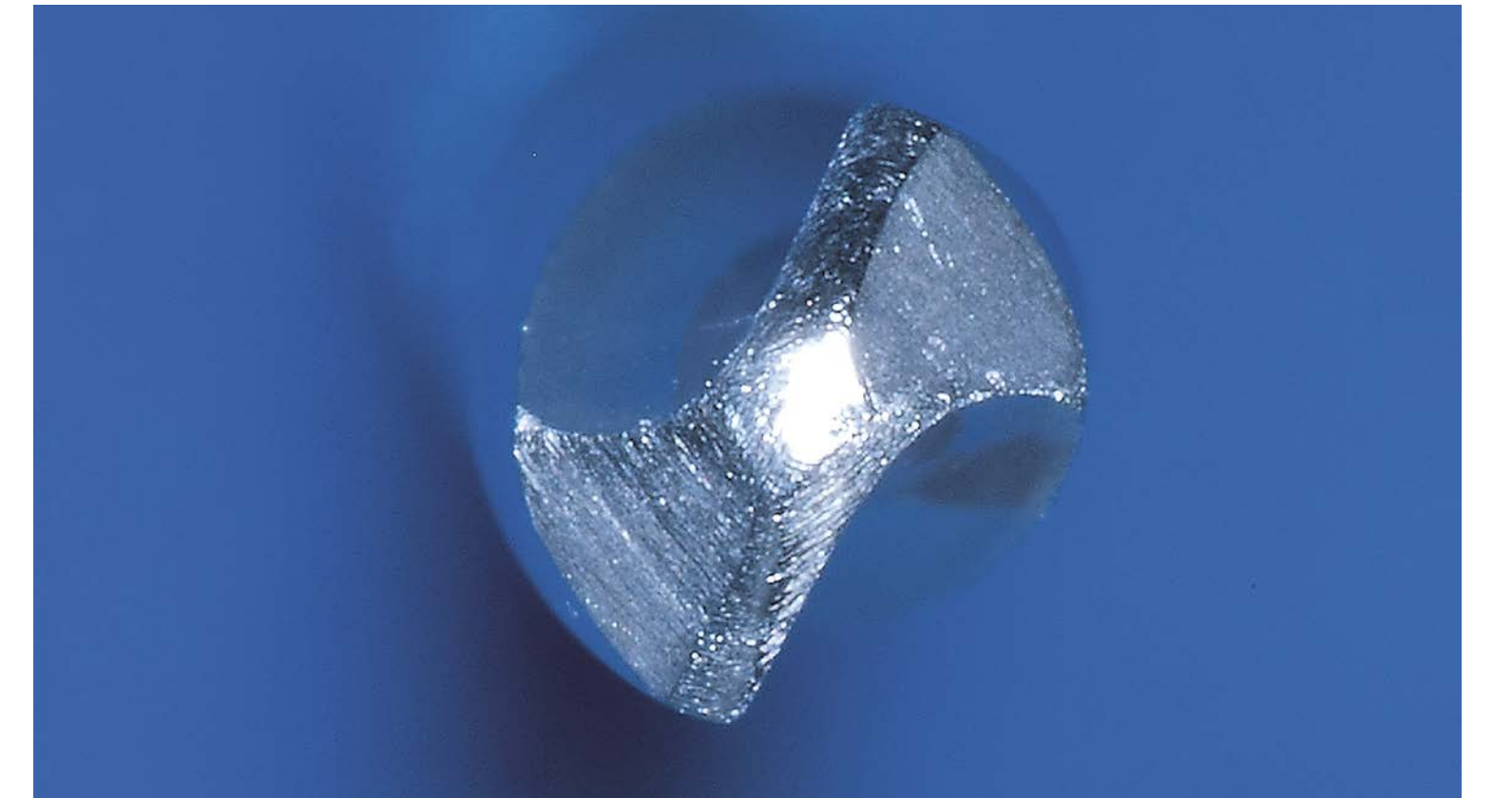
## Take-home message

- Use sharp drill bits to reduce heat generation and damage to bone
- Blunt drill bits must be replaced

### Observe the surface of the very tip of the drill bit

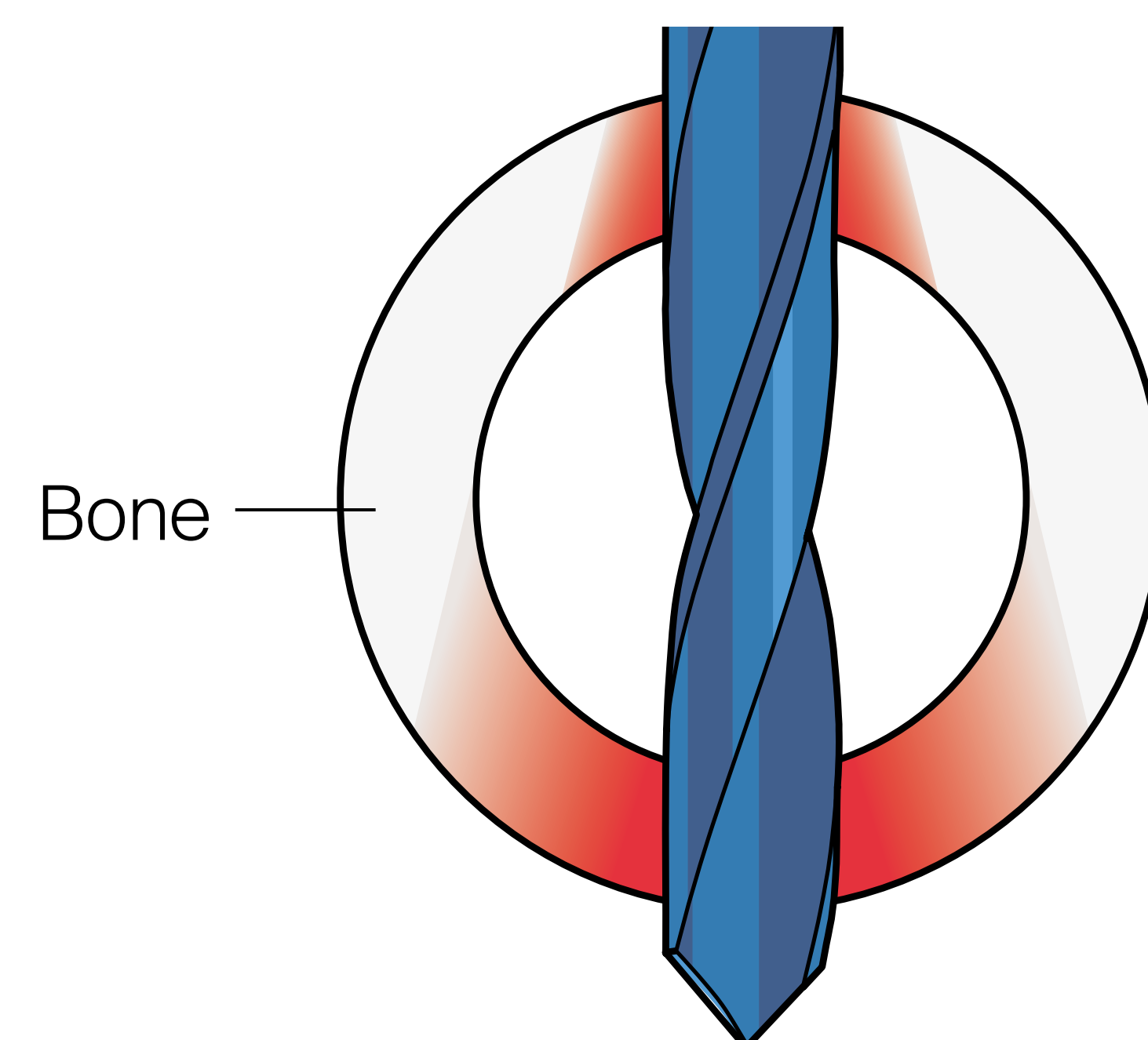


Sharp: no reflection of light on the tip



Blunt: light is reflected on the tip

### Heat generated during drilling causes conically shaped volume of damage to the cortex



### Cell necrosis as a function of temperature and duration of heat exposure

