

# **The Endodontics**

## **Errors in Root Canals Instrumentation**

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# Errors

Damage could happen to teeth iatrogenically by dentist thought root canal cleaning and shaping with conventional stainless steel instrument.

- Zipping: It results from tendency of instrument to straighten inside a curved root canal. The main axis of the root canal is transported (**internally or externally**), so that it deviates from its original axis. So, the terms **straightening**, **deviation**, **transportation** are also used to describe this type of irregular defect. The terms 'teardrop', 'hour-glass shape' and 'delta shape' are also used to describe the zipped apical part of the root canal.
- Elbow: It is **associated** with zipping and it occurs as irregular widening which occurs coronally along the inner aspect and apically along the outer aspect of the curve.

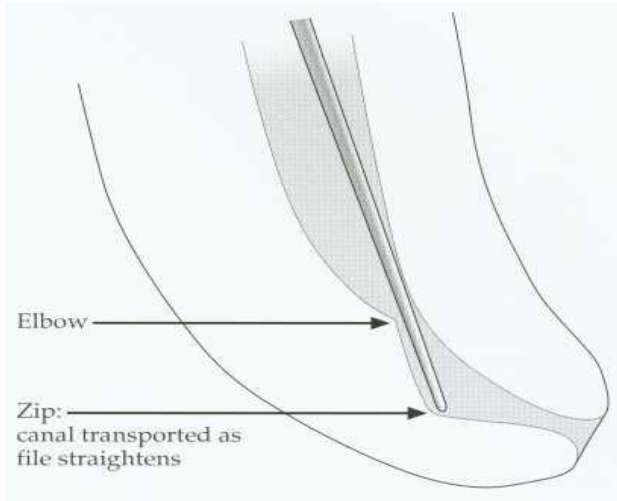


Figure 1. Zip and elbow.

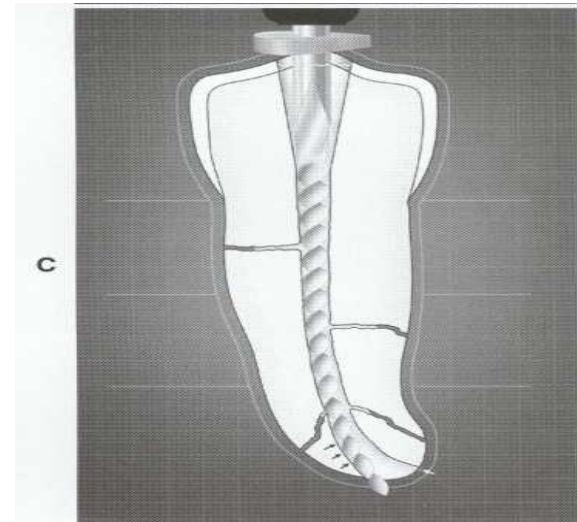


Figure 2. A transportation of the foramen results when larger, stiffer, and less flexible files are forced to length

- Ledging: It happens as a platform on the outside of the curvature. It may occur as a result of root canal preparation with inflexible instrument with sharp inflexible cutting tip.

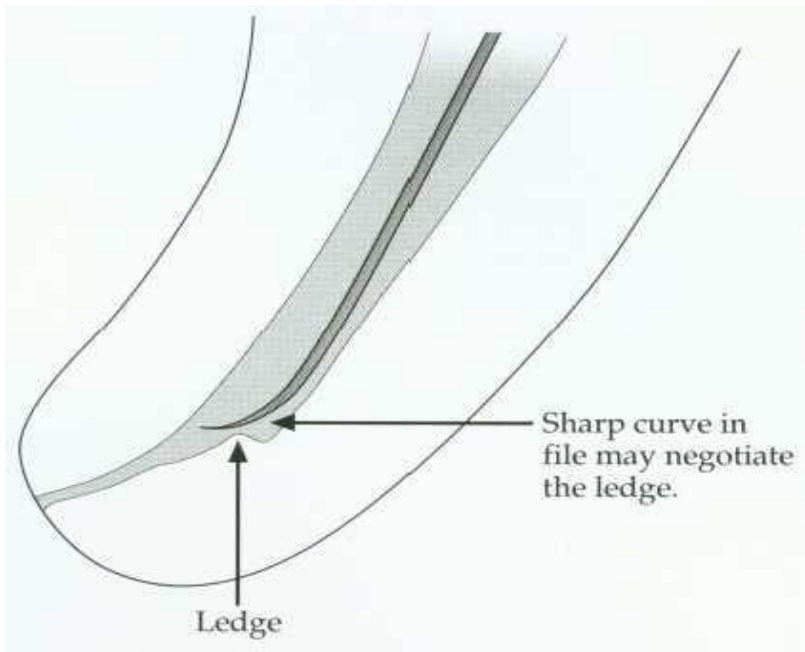


Figure 3. Passing ledges and blockages.

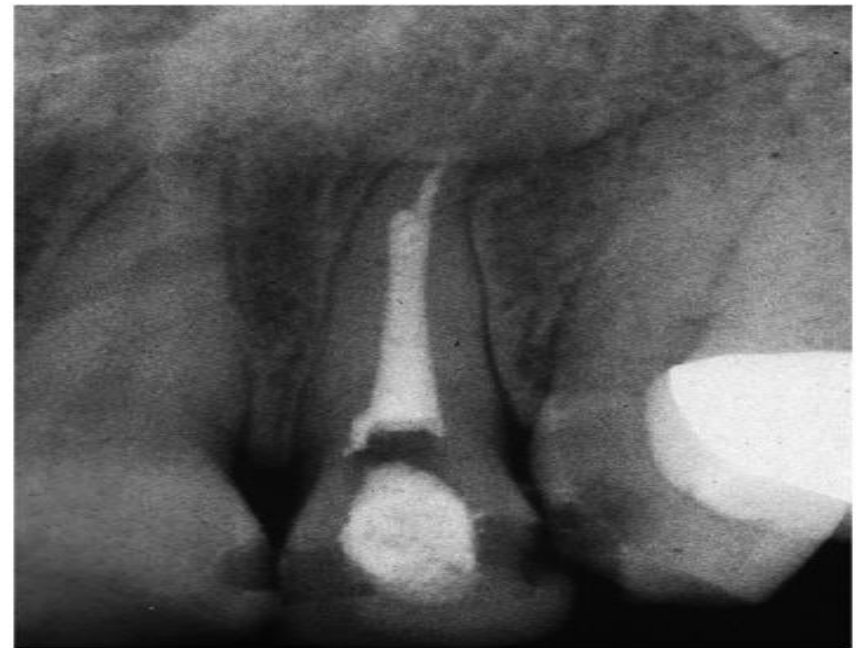


Figure 4. Ledging at the outer side of the root canal curvature.

- Perforation: It may occur as a result of preparation with inflexible instrument with sharp cutting tip. When used with rotational motion.

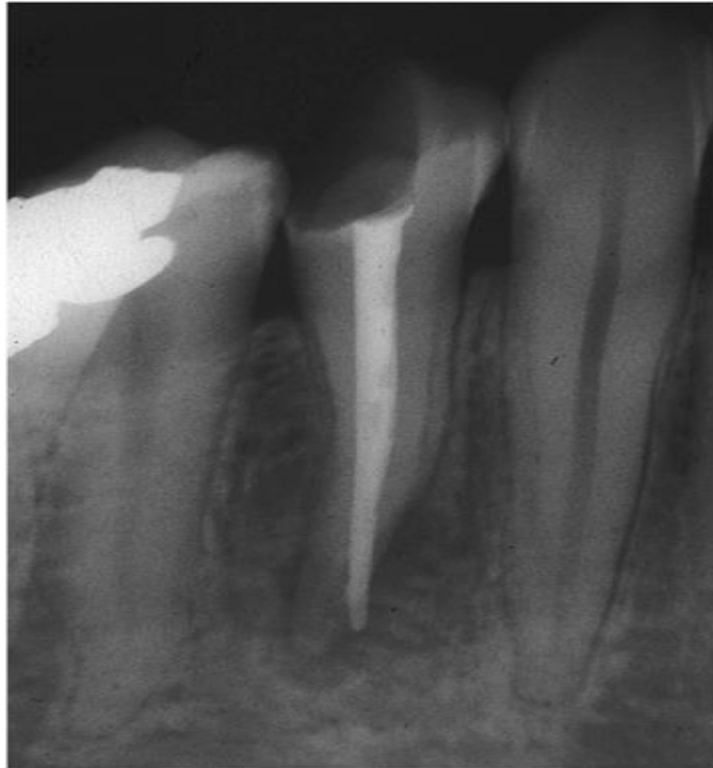


Figure 5. Perforation of a curved root canal.

- Strip perforate: It results from over-preparation and straining along **the inner aspect of the root canal curvature**.

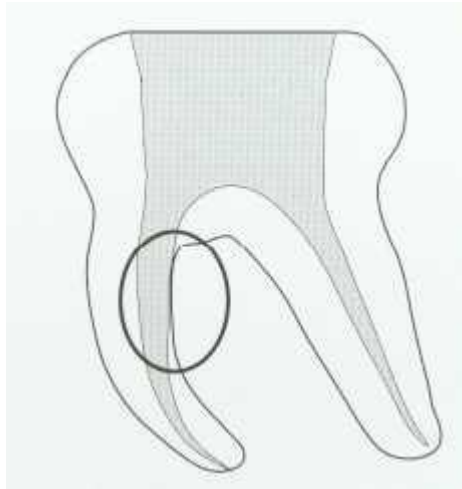


Figure 6. The circled area in the mesial canals is the position where a strip perforation could occur by over-preparation.



Figure 7. Strip perforation at the inner side of the curvature.

- Outer widening: it is an over-preparation and straightening along the **inner aspect of the root canal curvature**.
- Damage to the apical foramen: Displacement and enlargement of the apical foramen may occur as a result of **incorrect determination of working length**, straightening of the curved root canals, **over-extension** and **over-preparation**.

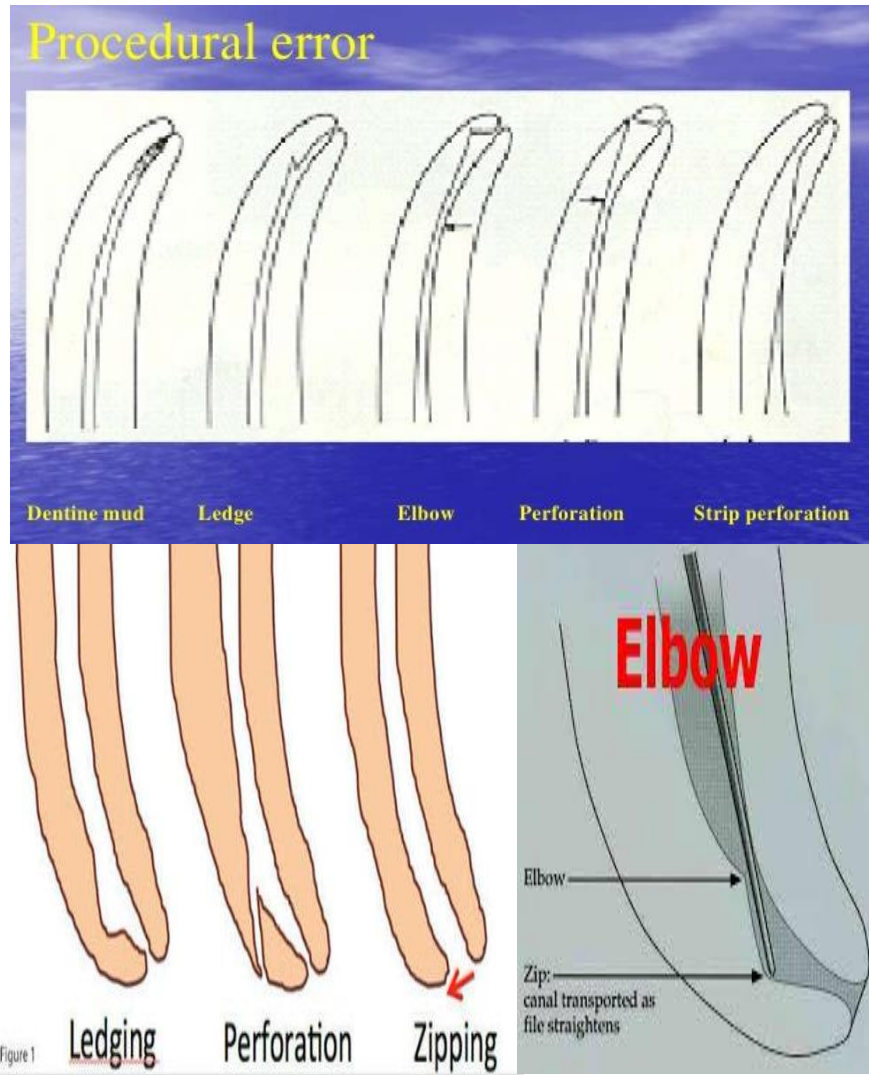
- Apical blockage: It results from packing of tissues, debris or instrument separation in which shortening of working length and root canal patency result.



Figure 8. Apical blockage by dentine debris.



# Conclusion



Thank you