SOUTHERNIMPLANTS®
Innovative Treatment Solutions

Broken Screw Removal Protocol

Broken abutment screws are relatively uncommon but may occur in clinical practice. In some situations, screw fracture acts as a protective mechanism, preventing damage or failure of the implant itself.

Several factors may contribute to a screw fracture, and determining the exact cause can sometimes be difficult. Where possible, the underlying cause should be identified and addressed to prevent recurrence.

The principle of screw removal drills is that, once embedded into the fractured screw, they grip the screw and rotate it out in a reverse (counter-clockwise) direction. These drills are used together with drill guides, which ensure that the drill remains parallel to the implant connection while protecting the implant interface and internal threads.

Screw removal instrumentation must only be used with a high-torque, low-speed motor unit operating in reverse.

Caution:
Excessive friction during screw removal may overheat the implant, potentially leading to implant failure. For this reason, less aggressive techniques should always be attempted before using screw removal drills.

Screw Removal Protocol

The following protocol describes a **stepwise approach** to screw removal. Each subsequent step should only be attempted if the previous step is unsuccessful.

Step 1 - Fine Probe

A fine probe may be used to gently rotate the fractured screw in an anti-clockwise direction. In many cases, once the screw fractures it becomes loose and can rotate freely within the implant.

If rotation is achieved, the screw may often be removed completely using a haemostat to grip the exposed portion while continuing to rotate it out.

Step 2 - Ultrasonic Scaler

An ultrasonic scaler may be used in a similar manner to the probe. The ultrasonic vibration can assist in loosening the fractured screw and encouraging rotation.

If the ultrasonic scaler alone does not remove the screw, Step 1 may be repeated as the vibration may have loosened the screw sufficiently for manual rotation.

Step 3 - Screw Removal Drills

Screw removal drills represent the most aggressive removal method. If used incorrectly, they may damage the implant interface or internal threads, and in severe cases could result in implant failure. Accurate alignment is therefore critical, emphasising the importance of using the appropriate drill guides.

Select the correct drill guide corresponding to the implant system and place it onto the implant interface. Ensure that the guide is fully seated and stable. Each drill guide includes a square connection that allows stabilisation with a ratchet or torque wrench.

All screw removal drills rotate in a counter-clockwise direction.

1. Pilot Hole Preparation
Use the I-SR-6 drill to create a pilot hole in the centre of the fractured screw.
- Speed: 600 - 800 rpm in reverse
- Irrigation: Copious irrigation required

During this process, the drill may engage the screw sufficiently to rotate it out of the implant while cutting the pilot hole.

Note: If the carbon steel tip of the I-SR-6 drill fractures inside the implant, implant removal may be required.

2. Screw Engagement and Removal
After the pilot hole has been prepared, use the I-SR-3 drill. This drill wedges into the internal walls of the pilot hole and engages the fractured screw, allowing it to be rotated out in a counter-clockwise direction.
•Speed: 10 - 20 rpm in reverse

Recommended drilling speeds
I-SR-6: 600 - 800 rpm (reverse, with copious irrigation)
I-SR-3: 10 - 20 rpm (reverse)

Step 4 - Rose-head Burr

A small rose-head burr may be used manually to engage the fractured screw and rotate it out. This technique may be attempted if the previous methods are unsuccessful.

After Successful Screw Removal

Once the fractured screw has been removed, it is important to verify that the internal implant threads remain intact.

This can be assessed by inserting a healing abutment or impression coping screw into the implant. If significant resistance is encountered, the internal threads may require cleaning.

If necessary, the implant threads can be carefully restored using an appropriate thread tap.
Refer to CAT-1210 for the available thread tap instruments.

ORDER GUIDE

DRILL GUIDES

External Hex

		
I-SRG-MSC-IP Ø3 mm (EX-30) Piccolo Implant	I-SRG-IBN Ø3.25 mm (EX-34) IBN/IBNT Implant	I-SRG-EXT-HEX Rest of External Hex range (EX-ZYG, EX-40, EX-50, EX-60 & EX-70)

TRI-NEX

			
I-SRG-L-35 Ø3.5 mm (EL-35)	I-SRG-L-43 Ø4.3 mm (EL-43)	I-SRG-L-50 Ø5 mm (EL-50)	I-SRG-L-60 Ø6 mm (EL-60)

DEEP CONICAL (DC)

		
I-SRG-DC3 Ø3 mm (DC3)	I-SRG-DC4 Ø4 mm (DC4)	I-SRG-DC5 Ø5 mm (DC5)

IT (Internal Octagon)


I-SRG-IT Regular Interface (IT)

Internal Hex (PROVATA & M-SERIES)

		
I-SRG-3M Narrow Interface (3M)	I-SRG-M Regular Interface (M)	I-SRG-Z Wide Interface (Z)

SP1 (SINGLE PLATFORM)


I-SRG-SP Regular Interface (SP)

DRILLS

	
I-SR-6	I-SR-3