

ELEVATING DENTAL CNC MILLING –

QUICKGRIND & OPTADENT SOLUTIONS

Optadent Solutions, a forward-thinking dental laboratory, faced a production bottleneck due to limitations with a standard 2-flute ball nose end mill supplied through a dental consumables distributor. The tool, while serviceable, lacked the reach and precision required for machining complex titanium and cobalt chrome restorations. This constraint forced compromises in CNC milling strategies and prevented full use of the lab's digital manufacturing capabilities.

Recognising the need for a more tailored solution, company owner Antony Wainwright reached out to Quickgrind with a specific request: a custom 2-flute ball nose tool with an extra 5mm of reach to better suit their applications.

THE QUICKGRIND APPROACH

Quickgrind's Total Solutions Engineering (TSE) approach was a natural fit for Optadent's needs. Following an on-site consultation, it was clear that a bespoke tooling strategy could deliver significant improvements in both efficiency and output quality.

What began as a single tool request evolved into a broader collaboration. Quickgrind began working closely with Antony and his team to understand the full scope of their CNC milling processes, and to explore how cutting tool design could be optimised for specific materials and machining challenges.

This relationship also inspired Quickgrind to delve deeper into the digital dental sector, connecting with machine tool manufacturers, CAD/CAM software providers, academics, and other dental labs to better understand industry trends, frustrations and opportunities.

RESULTS

Through this partnership, Optadent experienced measurable improvements:

- 40% increase in tool life
- Lower production costs
- Improved milling stability
- Reduced cycle times without compromising quality

These gains were achieved by replacing generic tools with custom-designed Quickgrind solutions. The bespoke 2-flute ball nose with extended reach became part of a precision-engineered tooling suite developed through Quickgrind's Infinite Possibilities® programme, supporting both performance and repeatability.

KEY INDUSTRY INSIGHTS

Quickgrind's ongoing engagement with the dental sector has revealed several important trends:

- Automation is transforming dental workflows, allowing complex restorations to be produced rapidly with minimal manual input.
- A wide range of materials is used, including wax, PMMA, zirconia, cobalt chrome and titanium, each requiring different tooling strategies.
- Terminology and process understanding are crucial to align with laboratory needs and patient outcomes.
- Tooling knowledge in many labs is limited, often shaped by the preconfigured packages supplied with CNC machines.
- CAD/CAM software and machine capabilities are frequently underutilised, with users unaware of how to adapt beyond default settings.
- Imported tools are being sold at inflated prices, with performance often falling short due to inadequate application-specific design.
- Dental lab technicians are keen to learn, but formal education in CNC machining is often lacking in dental academic programmes.

Quickgrind believes that stronger collaboration and knowledge sharing between industrial machining and dental labs will benefit both sectors. With better tooling insights and smarter milling strategies, dental laboratories can improve efficiency, reduce downtime, extend tool life, and lower operational costs.