Objective
Cutting and finishing approximal preparations with conventional instrumentation and methods may produce iatrogenic damage in adjacent tooth surfaces which subsequently requires restoration. The objective of this investigation was to determine the occurrence of iatrogenic damage and whether, under everyday working conditions in dental practice, such damage could be reduced significantly by using an alternative method and instrumentation designed especially for the purpose.

Method
Dental practitioners were asked to take impressions of teeth scheduled for Class II amalgam restorations. One group (control) prepared the teeth with conventional rotary instrumentation (n = 71), while the test group used a new method and instrumentation (n = 63). These comprised a set of files, a right-angle handpiece with reduced stroke, 36 fixed (rotation-locked) positions for the files and a cylindrical bur with a recessed front-end cutting surface. Damage to the adjacent teeth was assessed under a stereomicroscope.

Results
Using conventional methods, all adjacent tooth surfaces showed damage, often exposing deep layers of dental tissues. There was a clinical and statistically significant reduction of incidence and severity of iatrogenic preparation trauma in the test group.

Conclusion
It appears that conventional approximal box preparation results in significant damage to adjacent tooth surfaces. With the system tested, damage to adjacent tooth surfaces during preparation of proximal boxes can be significantly reduced. This should have an impact on the subsequent rate of restoration for the adjacent surfaces.