

Comparison between manual and semiautomatic microtomes

¹ Ainhoa Arranz Yélamos ¹ Belén Martín Urdiales ¹ Purificación Domínguez ² Fernando Casco Claro ³ Carmelo Lupo, ³ Clara Pecorella, ³ Paolo Locatelli

¹ Hospital Universitario Rey Juan Carlos, Madrid Spain ; ² Unilabs Pathology, Madrid Spain ³ Innovation Department, Diapath S.p.A

History

The current terminology that classifies the typologies of microtomes currently available to technicians in histology contains a significant breakdown.

Normally, there is a distinction between "manual" and "automatic" or "semiautomatic" and this generates, for users accustomed to using a manual microtome, the idea that with non-manual models, the cut is entrusted to the cold control of a Microtome software/hardware, as opposed to the technician's skill.

Materials and methods

More than 12,000 paraffin blocks from different histological samples were cut with the Galileo Series 2 semiautomatic microtome (Diapath S.p.A., Italy). The sections obtained were subsequently stained with hematoxylin and eosin and several special stains were used to evaluate the quality.

The evaluation of the results was carried out by technicians based on the following parameters: ease of cutting (from 1 to 10), ease of blade change, quality of the section obtained in relation to the sample.

The quality of the stained sections was validated by pathologists with a scale from 1 to 10.

Technical evaluation



Analysis

The correct terminology to use would be mechanical microtome and electronic microtome: in the first model there is a manual/visual management of the position of the block (clamp) through a handwheel; in the second model there is an electronic and precise management of the position of the clamp through a local screen or a remote control.

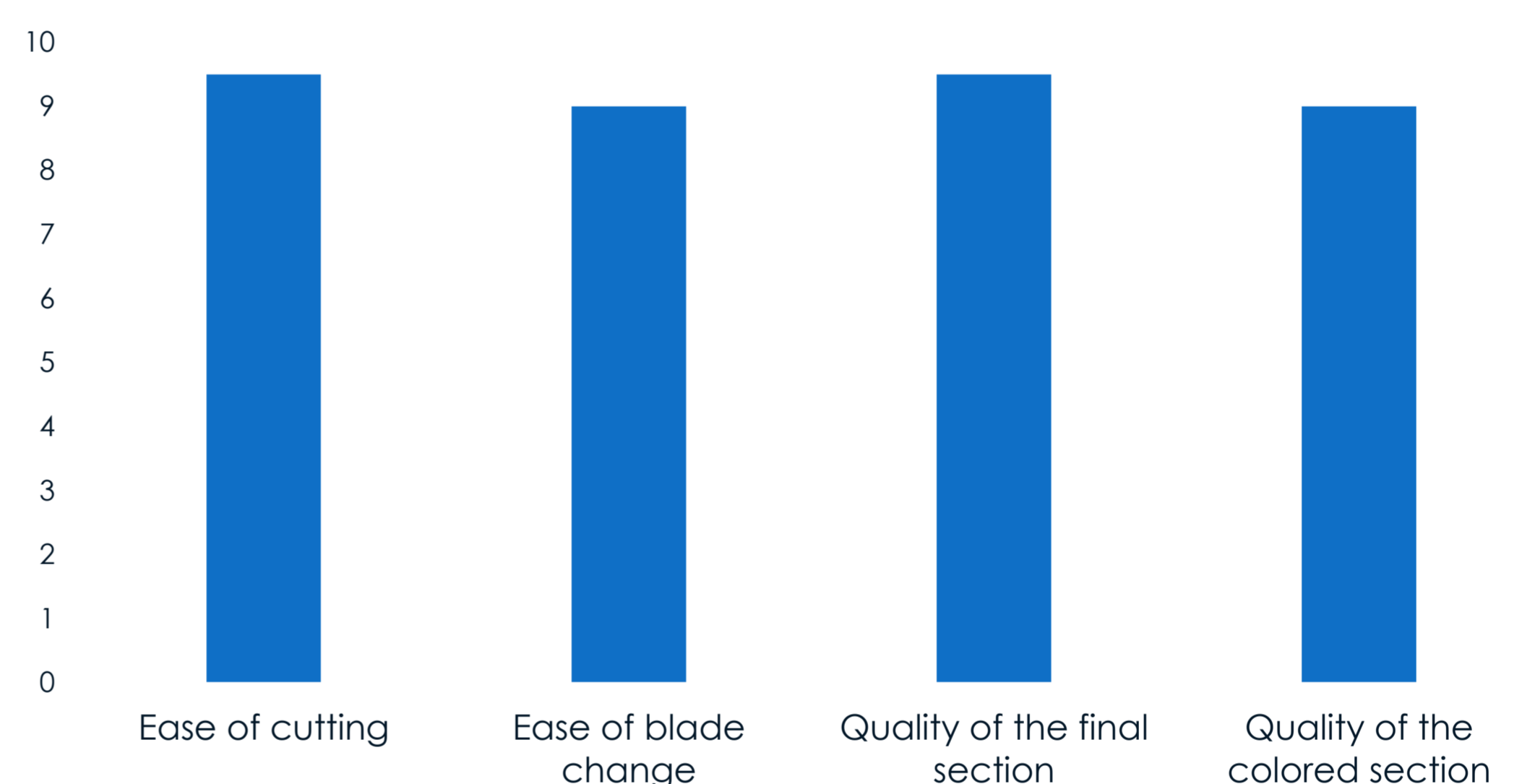
Mechanical microtome: the position of the clamp is regulated by a handwheel located on the left side of the microtome.



Electronic microtome: the position of the clamp is regulated by a digital controller.



Results and staining quality



Conclusion

With the same quality of the final section, the electronic microtomes guarantee the following benefits:

Technical: constant precision, more reliability and less maintenance, thanks to the replacement of mechanical parts subject to wear through electronic boards and sensors.

Ergonomic: lower frequency of musculoskeletal disorders, tension of the rotating movement, rotation of the handle and lumbar pain caused by bending over the machine, thanks to the removal of the left handwheel, the presence of the remote control and, in the automatic models, of the dynamic pedal (only present in the brand Galileo by Diapath S.p.a.)

