Marking Excision Margins of Surgical Specimens by Silver Impregnation

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Summary
Marking excision margins of surgical specimens by silver impregnation has several advantages over commonly used Indian ink: during the slicing the tissue preserves its natural color, the staining is permanent, and the pigment does not smudge over cutting surfaces. The pigment is clearly visible in tissue sections.
The tissue specimen is shortly dipped into a 10% water solution of argent nitrate ($AgNO_3$ with HNO_3). After slicing, the tissue specimens are developed in common black & white developer for several seconds and paraffin processed as usual. The method is suitable for formaldehyde fixed as well as fresh tissue specimens.
Key words: **surgical margin – surgical specimen – biopsy**

Souhrn
Značení resekčních okrajů tkáně stříbřením

Značení resekčních okrajů vzorků tkáně stříbřením přináší oproti běžnému značení tkáně tuší některé výhody: tkáň při přikrajování zachovává původní barvu, zabarvení je stálé, nedochází ke znečištění řezné plochy ani tekutin při sycení tkání parafinem, značení je dobře viditelné na tkáňových řezech.
Pro značení používáme krátké ponoření tkáně do roztoku 10% dusičnanu stříbrného $AgNO_3$ s přídavkem kyseliny dusičné; po nakrájení jsou tkáňové řezy vyvolány běžnou černobílou fotografickou vývojkou.
Klíčová slova: **resekční okraj – bioptický vzorek – biopsie**

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When preparing tissue blocks from surgical specimen of tumorous lesions it is usually necessary to mark surgical margins of the tissue in order to evaluate the adequacy of lesion removal. Common practice is to coat the tissue with India ink by immersion, spraying or painting by a small brush. The India ink can be coagulated by Bouin's solution. However, even the coagulation does not prevent smearing the ink onto the sliced surface. This may cause problems, because polluted cutting surface may simulate resection margin in askew embedded tissue blocks.

Another problem is the dark staining of the specimen before the slicing, which may cause problems with orientation of the tissue and evaluating fine anatomical details.

Therefore we sought a method which would fulfill following requirements:

- the method should work on wet fixed as well as fresh tissues
- the pigment must survive formol-paraffin process
- the tissue specimens should not be significantly stained before the slicing
- the pigment should not smear onto the sliced surface
- the pigment must be visible in the tissues stained by common methods and the process must not interfere with histological and immunohistological methods
- the staining of the tissue must be fast and the process easy
- the reagents should be easily available without strict demands as far as the purity and exact dosing

Materials and methods

The method is based on reaction of the argent nitrate ($AgNO_3$) with natrium chloride (NaCl) within the tissue. Newly formed argent chloride (AgCl) is developed by common developer for black and white photographic process. Thus the surface of the tissue is stained black by the mixture of silver and silver oxide.

We have found no literary reference to this