BACKGROUND: the pre-fixation “ischemia” time represents a potentially dangerous step affecting preservation quality of both structure and tissue components (proteins, nucleic acids). While best practice requires immediate transfer of surgical specimens from theatres to Pathology laboratories, this is often impractical for structural reasons and a series of alternatives have been devised. Most common worldwide is the transfer of specimens in formalin-filled boxes, a practice which implies several drawbacks, both for tissue preservation and local environment.

DESIGN: In our Hospital (a large, pavilion hospital in Piedmont, Italy) the traditional habit of transferring specimens from the surgical theatre to the Pathology laboratory immersed in formalin was substituted by Under-Vacuum sealing (U.V.S.) using the Tissue-Safe® apparatus (Milestone, Soresole, Italy). Sealed specimens were kept at 4°C for 1-72 h until transfer. Grossing, fixation in Phosphate-buffered Formalin (PBF) and paraffin embedding followed.

The Tissue-Safe® apparatus is located in the premises of operating theatres.

TISSUES PRESERVED UNDER VACUUM & COOLING

Merits:
- No more formalin in surgical theatre (except for small specimens, where pre-filled tubes are employed)
- No spilling
- No fumes
- No drying of tissues
- Colours preserved
- Lack of insulating air around tissues allows fast cooling
- Tissues (bags) light and easy to carry
- Structure (RNA, Antigens) preserved up to days
- Banking (selective) allowed
- Demonstration of operated tissues for students and surgeons

BREAST CANCER: One hundred twenty nine consecutive cases of breast cancer were stored in U.V.S. at 4°C for a time between 1 and 72 hours (mean 23 h), before grossing. A specimen (punch biopsy) was taken, immersed in RNA later® and sent for Gene Expression Analysis (GEA). Evaluation of RNA values proved that in all cases the material was fit for GEA analysis (RIN value mean 7.9).