New tissue acquisition tools for translational research

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Histological and molecular examinations are a prerequisite to understand diseases, determine optimal individualized care, and identify targets for potential novel therapies. Despite this key role of tissue based research the act of biopsy still remains troublesome. New direct and frontal biopsy technologies are emerging with the aim to alleviate the bottleneck of inappropriate minimal invasive interventions. Their recent availability provides a good occasion to look into the subject of tissue acquisition problem, i.e. not enough high quality tumor tissue in sufficient quantity. The new instruments for minimal invasive procedures were evaluated to generate data on the usefulness to provide enough high quality tissue for omic research in comparison to diagnostic surgery for various soft tissues and bone lesions throughout the body. Recent single and multicenter studies provide evidence in more than 1000 patients that macrobiopsies, such as the Spirotome and Coramate, give tissue samples between 150 and 300 mg of highly specified parts of the diseased area in a way very similar to open surgery. In addition, biopsy procedures are increasingly more patient friendly with appropriate comfort and safety. The new macrobiopsies are less expensive, making molecular biology at reach for every oncological patient, company and health care provider. Direct and frontal macrobiopsies open new avenues for future bio-banking, pharmacogenomics, omic research and personalized medicine. It is anticipated that drug discovery and clinical implementation of targeted therapies will be highly facilitated and that clinical research time for multicenter trials will be significantly shortened.