GEC-ESTRO Urology working group report

GEC-ESTRO Urology **(**URO-GEC) is the working group within the Groupe Européen de Curiethérapie (GEC) and the European SocieTy for Radiotherapy and Oncology (GEC-ESTRO) that focuses on brachytherapy for urological cancers, particularly prostate cancer. In common with others, the past year has presented many challenges as face-to-face meetings have been abandoned, but the virtual medium has been invaluable in maintaining contact between members. Indeed, in many instances it has enabled greater participation without the need for travel and time away from our hospitals, which for many is becoming increasingly difficult.

Against this background, we have a strong core group of 18 colleagues with most European countries represented. We have continued meetings on a regular basis, which has enabled projects to be developed and maintained.

We continue to work in close collaboration with the group that considers the brachytherapy physics quality assurance system (BRAPHYQS). Although our tradition of holding joint meetings has been put aside during this period, we maintain strong links, with attendance by BRAPHYQS group members at our meetings to provide specialist brachytherapy physics input.
Highlights of our activities and recent achievements include the following:

LDR BT TURP study

This was a prospective study to evaluate urinary function in patients undergoing low-dose-rate (LDR) brachytherapy for prostate cancer who had undergone a previous transurethral resection of the prostate (TURP). Specific planning criteria were defined to take into account the central cavity and a planning exercise was completed successfully in a multicentre setting. Subsequently, 99 patients were entered into the study with prospective measurement of urinary function post implant. The results confirm that the incidence of urinary morbidity is low and consistent with that seen in patients who have not undergone TURP. This work has been published with the important message that, with appropriate planning modifications, LDR brachytherapy after TURP can be performed safely with no greater morbidity than in patients without TURP.

Predictors of urinary toxicity

Although there are well-defined urethral constraints when planning high-dose-rate (HDR) prostate brachytherapy, their relation to urinary toxicity and in particular the dose response for development of a urethral stricture is inconsistent. There have been suggestions that urinary toxicity may be more closely related to bladder-base dosimetry than previously thought. This work reviewed the literature and evaluated a prospective series of patients to relate various dosimetry parameters to subsequent urinary toxicity. In fact there was no relation with conventional urethral constraints or bladder-base dose-volume parameters. The most predictive value was related to proximity of loaded HDR catheters and dwell times close to the urethra.

Focal prostate brachytherapy randomised controlled trial: the POWER trial

There has been considerable interest in focal treatment in recent years that spares a portion of the prostate gland from exposure to a high dose in the hope of minimising toxicity. The URO-GEC group has developed a prospective, randomised trial to evaluate this approach. The POWER study (chief investigator: Bradley Pieters, radiation oncologist, Amsterdam University Medical Centers, The Netherlands) is randomising 254 patients with biopsy-proven unilateral prostate cancer to either whole gland or hemigland brachytherapy. Funding has been obtained from the Dutch Cancer Society for data collection and analysis in Amsterdam; additional support is provided by Elekta and the Deutsche Gesellschaft für Urologie (DGU, German Society of Urology). There is a rigorous quality-assurance process with a dummy run for all centres that wish to take part; each centre must elect to deliver either HDR, 27Gy in two fractions, or LDR, 145Gy I-125 to all patients.

Salvage brachytherapy

Many centres offer salvage brachytherapy, by either LDR or HDR, for biochemical relapse in patients who have had previous external beam radiotherapy, often with a lower dose than modern protocols. There are variations in entry criteria, staging and techniques; some offer focal therapy, others whole gland irradiation. The current literature is unsatisfactory, with relatively small

series of patients illustrating the range of patient selection and treatment options. To address this, and recognising that a formal trial is unrealistic, we are establishing central database led by colleagues in Gliwice, Poland, who have some of the widest experiences of salvage brachytherapy in Europe. It is hoped that the establishment of this database will enable collection of data on a large cohort of patients that can be analysed in due course to give more definitive insight into appropriate selection criteria and treatment policies.

ESTRO-ACROP prostate guidelines

The LDR brachytherapy guidelines that were drawn up by ESTRO and the European Association of Urology (EAU were published in 2000 and the HDR guidelines were last updated in 2013. Clearly there have been major changes in practice since that time, and an update of the guidelines is in preparation under the auspices of the Advisory Committee for Radiation Oncology Practice (ACROP) with ESTRO and with endorsement by the EAU. These have been the subject of prolonged discussions in our meetings over the past year. A final, agreed version is now complete and is going through the review processes with ACROP and the EAU. It is hoped that these will be published before the end of 2021.

In addition, URO-GEC provides a forum for active discussion between group members; recent examples include a review of HDR brachytherapy fractionation and proposals for future trials following the results of the focal lesion ablative microboost in p*rostate cancer* (FLAME) study, which demonstrated the role of boost radiotherapy in prostate cancer. We are also aware that stereotactic body radiation therapy (SBRT) is becoming increasingly recognised as an effective modality and proposals for new trials that compare SBRT with brachytherapy are underway. These include possible collaboration with Canadian colleagues, who joined our recent meeting.

URO-GEC is always open to new members who are active in brachytherapy for urological cancers and who wish to contribute to our activities.

The POWER study is open to centres that have an active prostate brachytherapy programme and can commit to recruitment of patients over the next 18-24 months.

Contact: peterhoskin@nhs.net (URO-GEC) or b.r.pieters@amsterdamumc.nl (POWER)

Relevant publications:

Salembier C, Rijnders A, Henry A, Niehoff P, André Siebert F, Hoskin P. Prospective multi-center dosimetry study of low-dose Iodine-125 prostate brachytherapy performed after transurethral resection. J Contemp Brachytherapy. 2013 Jun;5(2):63-9

Salembier C, Henry A, Pieters BR, Hoskin P. A history of transurethral resection of the prostate should not be a contra-indication for low-dose-rate (125)I prostate brachytherapy: results of a prospective Uro-GEC phase-II trial. J Contemp Brachytherapy. 2020 Feb;12(1):1-5.

Groom N, Tsang Y, Lowe G, Hoskin P Risk factors for urethral stricture following external beam radiotherapy and HDR brachytherapy for prostate cancer. Brachytherapy. 2021 Mar-Apr;20(2):302-306

Peter Hoskin
Chair, URO-GEC WG