A0441

Expert consensus on high intra-renal pressure during ureteroscopy: A pan-European Delphi panel

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Objectives

- There is only limited clarity on what defines high intra-renal pressure (IRP), its possible risks, and how to monitor and manage it.
- A Delphi study was undertaken to help identify and understand which patients are most at risk from high IRP and its possible associated complications.

Methods and materials

- A mixed-methods Delphi study (**Figure 1**) was conducted with expert urologists
- Participants were identified as leading authors from a literature review of ureteroscopy and IRP undertaken by the study sponsor
- Mixed Delphi Panel consisting of two online surveys prior to an in-person meeting
- Two anonymous online surveys
  - Survey 1 was broad and qualitative
  - Survey 2 was based off answers to Survey 1 and explored IRP in more depth
- In-person discussion
  - Areas of agreement and disagreement were explored
- Consensus statements developed by the panel and anonymously voted on

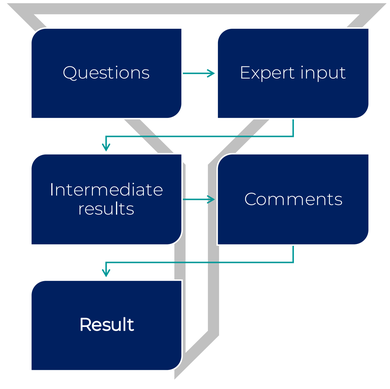

Figure 1: Underlying concept of the Delphi panel process

Results

The panel

- **11 endourologist** from EMEA (**Figure 2**)
  - Average of 15.9 years of experience
  - Median of 40 diagnosis of urolithiasis/nephrolithiasis per month
  - Median of 30 stone removal procedures per month

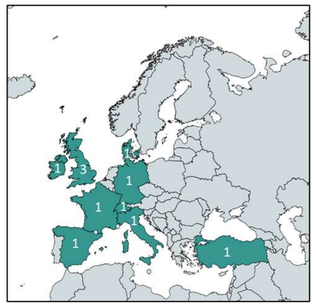

Figure 2: Where the panelist practice

Consensus development and voting

- **11 statements** developed during the panel discussion
- First round of voting
  - 9 out of 11 statements with majority consensus
  - 2 statements reworded and revoted
    - Rewording was suggested by the panel
    - Statement 3 & Statement 7
- Second round of voting (**Figure 3**)
  - 11 out of 11 statements reached majority consensus (**Table 1**)

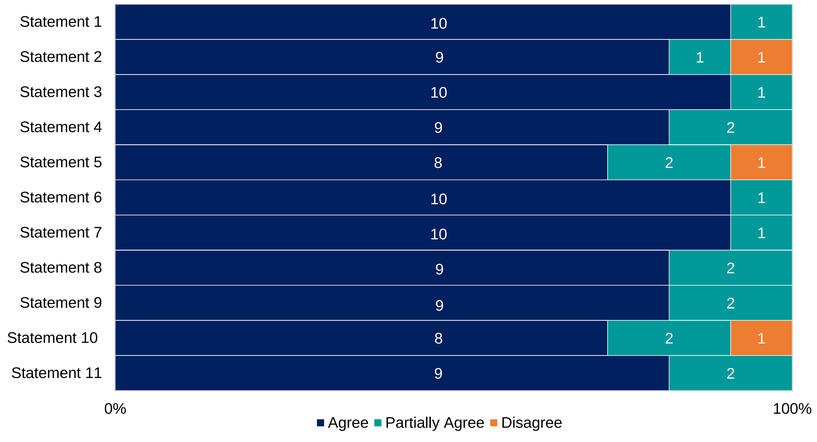

Figure 3: The scores on the statements after the final round of voting

Conclusion

- Any IRP above physiological levels could be considered high
- High IRP during ureteroscopy are concerning as it may correlate to increase risk of complications
- Consensus was reached on factors that could put patients at an increased risk of complications from high IRP
- Monitoring IRP in patients at risk could improve patient safety
- Additional research is needed to better understand benefits and mitigate risks

Table 1: The consensus statements

1	High intra-renal pressure is a pressure that is above the normal physiological pressure in the kidney (~15 cm H_2O)
2	The higher the intra-renal pressure, the higher the concern for patient safety. There is no consensus on a specific threshold. Initial concerns regarding intra-renal pressure start from 40 cm H2O. There is initial evidence that an intra-renal pressure over 100 ±50 cm H2O is of particular concern, but in some patients, values lower than this can also be of concern.
3	Spikes and sustained high intra-renal pressure may both cause intra-renal pressure-related problems.
4	Certain complications could arise in part due to high intra-renal pressure during the procedure, and it is advisable to work at the lowest pressure feasible to complete the procedure successfully. Infection-related: Fever, UTI, Urosepsis Postoperative pain Bleeding related: Intra-operative bleeding, Post-operative hematuria, Hematoma formation
5	If there were no cost or resource constraints, we would recommend monitoring intra-renal pressure in all patients.
6	Baseline and safe intra-operative renal pressure are individual to each patient. This could be linked to the patient's characteristics.
7	Characteristics that could put patients at higher risk of complications from ureteroscopy could be broadly grouped into: Infection: *recurrent UTIs, infectious stones, history of positive urine culture, immunosuppressed patients, Charlson Comorbidity Index score of ≥7, female, diabetes, prolonged ureteric stent dwell time.* Procedure characteristics: *long procedure time* Anatomical conditions: *tight ureter, narrow pelvic junction, narrow infundibulum, congenital anomalies, ileal conduit*
8	There might be an association between intra-renal pressure and patient outcomes. Knowledge of intra-renal pressure could lead to changes in clinical practice. We need more data to investigate how intra-renal pressure monitoring is going to impact patient outcomes.
9	More data are needed to investigate the association between intra-renal pressure and patient outcomes.
10	Although rare, bleeding that impairs vision and leads to prolonged or aborted procedures could be linked to changes in intra-renal pressure during the procedure.
11	Pressure readings may be clinically unreliable in particular situations, such as in the case of forniceal rupture.

Disclosure

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