Blue Light Cystoscopy with Cysview: The USC Experience

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Abstract

Introduction: Blue light cystoscopy (BLC) using hexaminolevulinic acid has been shown to improve the detection of nonmuscle invasive bladder cancer (NMIBC) during transurethral resection of bladder tumors.^{1–3} Although the FDA has not yet approved BLC for the detection of carcinoma *in situ* (CIS), both the European Association of Urology and the International Consultation on Urological Diseases recommend it based on the evidence from clinical trials. Despite the lack of recommendation for repeat use or re-resection, a number of trials have shown the significant improvement in detection of recurrent papillary tumors.² BLC results in lower recurrence rate and a better recurrence-free survival, but no study, to date, has shown a progression benefit.⁴ Overall, the false-positive proportion rate of BLC is 12% while it was 10% with white light (WL) alone. In this video, we demonstrate the use of Cysview® for the detection of different stages of urothelial carcinoma, its role in detection of cancer in the margin of previous resection, and the efficacy of BLC in detecting concealed or tumor obscured ureteral orifices.

Materials and Methods: From April 2012 to May 2015, 252 patients underwent BLC and transurethral resection of bladder tumor (TURBT) at our institution. Several cases are highlighted in the video demonstrating cystoscopic view under WL and blue light (BL) with pathology results.

Results: BLC with Cysview is demonstrated in a number of challenging cases for the detection of NMIBC. The positive bright red areas were biopsied and revealed urothelial carcinoma in each case. The first case shows a papillary tumor on the right lateral wall with WL. The tumor was clearly positive under BL (bottom left) with final pathology showing high-grade T1 urothelial carcinoma. BLC also identified an additional flat lesion extending from the area of the tumor, which was not detected using WL alone (pathology was consistent with CIS). The second patient shows the bed of a previous resection site, which is completely negative on WL but positive with BL. Final pathology revealed CIS in this case. The last case demonstrates an obvious papillary lesion on the left hemitrigone that was positive under BL as well (which was a high-grade Ta tumor). Additionally, we were able to identify previously undetected tumor in the left ureteral orifice as well as a BL-positive flat lesion surrounding the orifice (CIS on pathology). Another useful aspect of BLC is the ability to identify a urine jet (as a green hue) from the ureteral orifice without the use of methylene blue or indigo carmine. This feature is especially helpful in cases where the ureteral orifice cannot be easily identified secondary to anatomical variation or overlying tumor. There were 10 (4%) minor complications after Cysview instillation (all mild irritative symptoms), but no hypersensitivity reaction even on repeat use (40 procedures).

Conclusions: The use of BLC with Cysview can help with the detection of NMIBC and CIS in patients undergoing TURBT for bladder cancer. Other indications for using BLC are detecting tumoral involvement of previous resection margins and finding obscured ureteral orifices.

No competing financial interests exist.

Runtime of video: 8 mins 22 secs

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