



CASE STUDY of HD-NBI

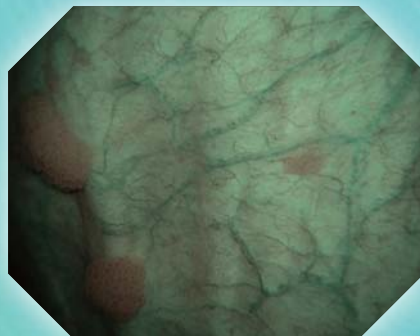
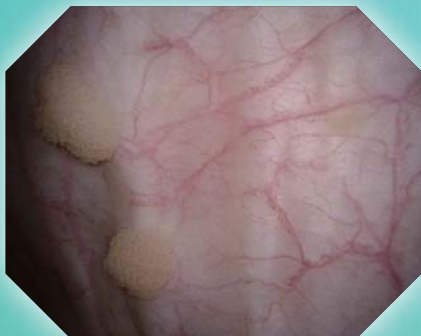


UROLOGY

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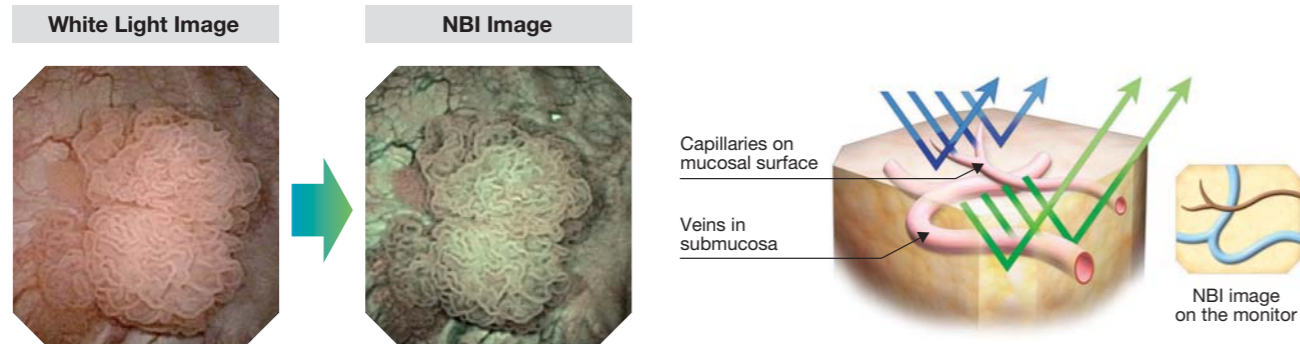
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Narrow Band Imaging

NBI is an optical image enhancement technology that enhances the visibility of vessels and other tissue on the mucosal surface. Narrowband illumination, which is strongly absorbed by hemoglobin and penetrates only the surface of tissues, is ideal for enhancing the contrast between the two. As a result, under narrowband illumination, capillaries on the mucosal surface are displayed in brown on the monitor, and veins in the submucosa are displayed in cyan.



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Junichi Inokuchi, MD.
Katsunori Tatsugami, MD.
Prof. Seiji Naito, MD.

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Prof. Jean de la Rosette, MD.

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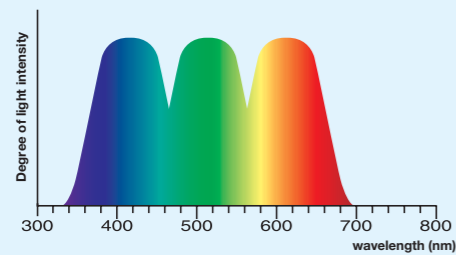
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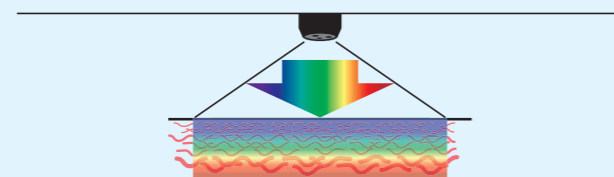
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Conventional White Light

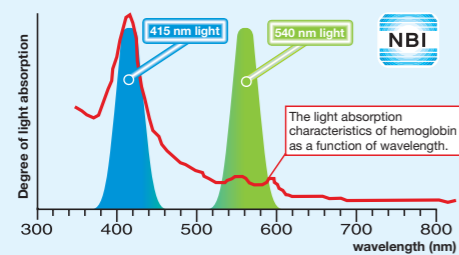


White light is composed of an equal mixture of RGB wavelengths.

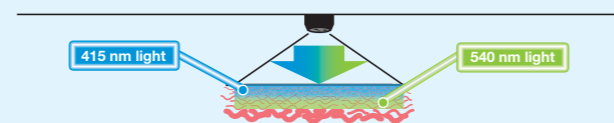


Short wavelengths have shallow penetration characteristics whereas long wavelengths penetrate deeper into the mucosa.

NBI (Narrow Band Imaging)



The narrowband light is composed of two specific bands that are strongly absorbed by hemoglobin.

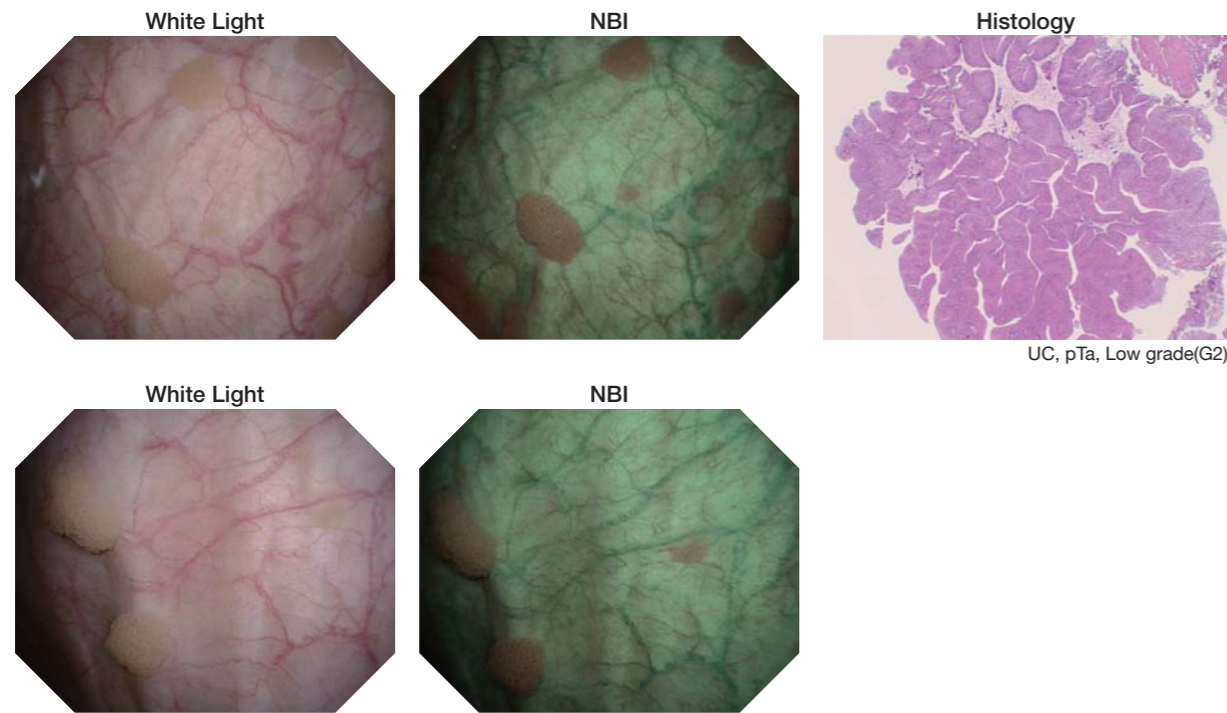


Short wavelengths penetrate only the superficial layers of the mucosa.
 → Absorbed by capillary vessels in the surface layer of mucosa.

Longer wavelengths penetrate deeper compared to 415 nm light.
 → Absorbed by blood vessels such as veins, which are located deeper than capillary vessels in the surface layer of the mucosa.

Papillary peduncular tumor/Sessile tumor

age 80, female

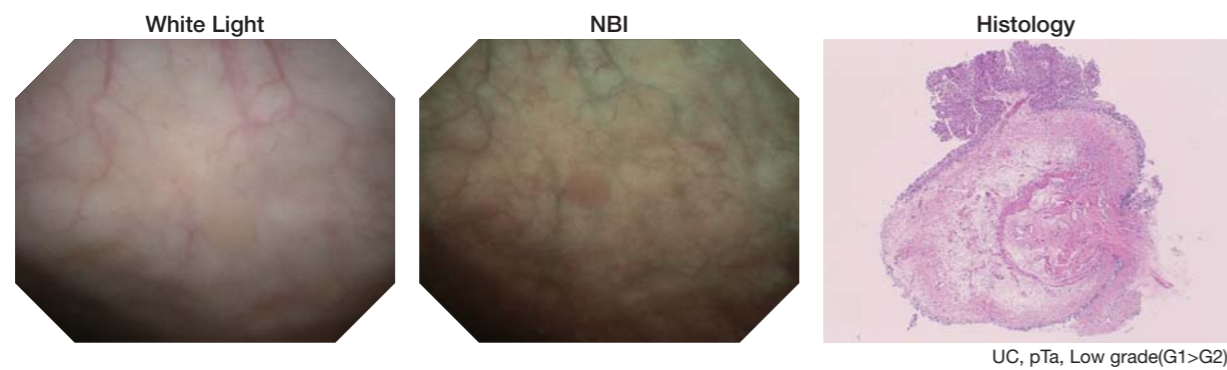


Comments

A small tumor is highlighted under NBI which was suspected under WLI.

Papillary peduncular tumor

age 61, male

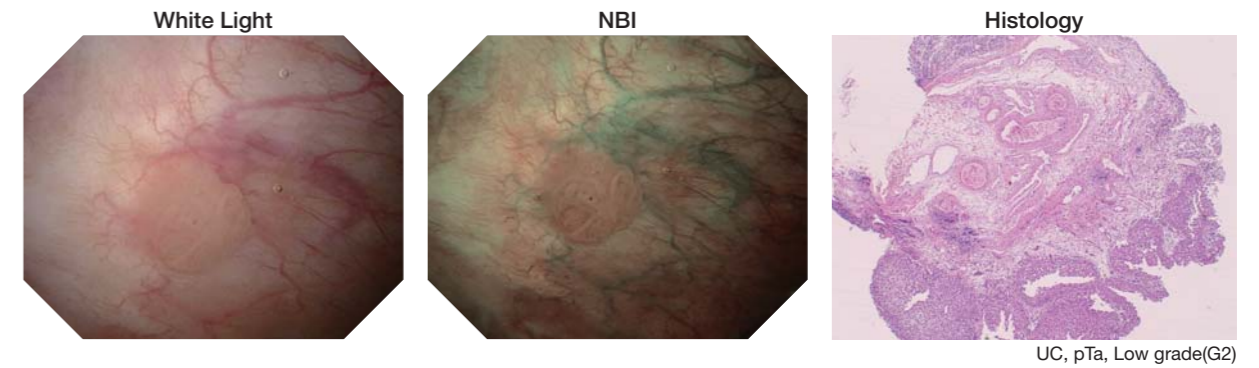


Comments

Utilizing NBI enables us to enhance visualization of the marginal region of the tumor.

Papillary peduncular tumor

age 82, male

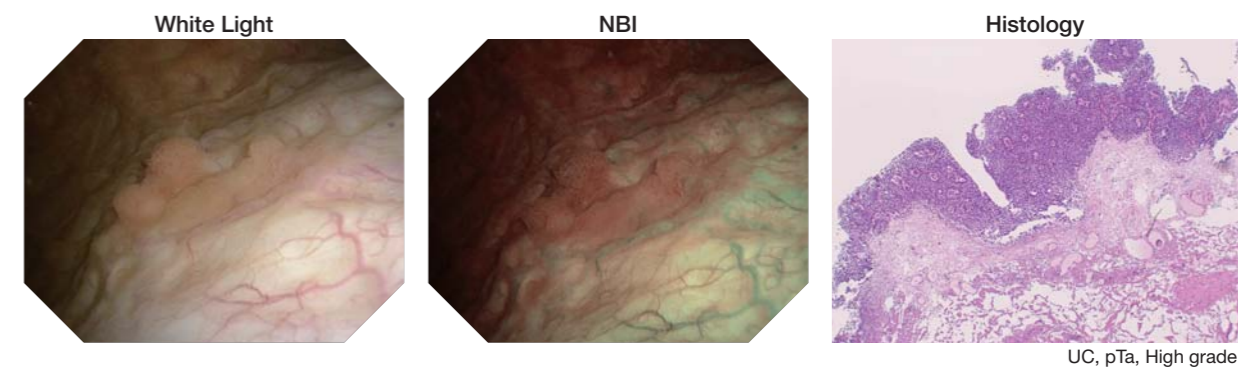


Comments

Utilizing NBI enabled us to visualize a marginal region of small tumors which were difficult to visualize under WLI.

Papillary sessile tumor

age 82, female

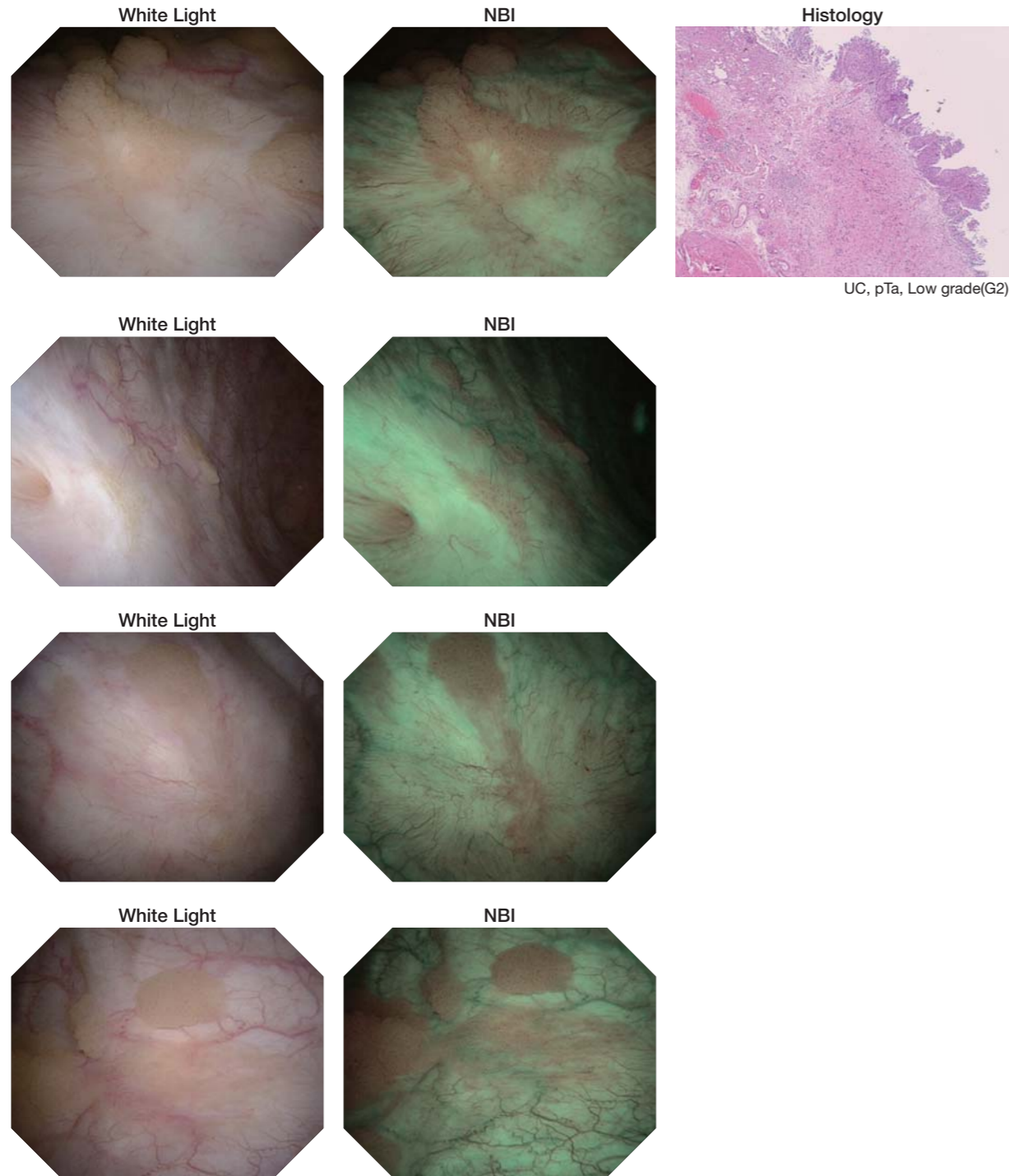


Comments

Utilizing NBI enabled us to enhance visualization of the marginal region of the tumor. Also NBI enabled us to identify surrounding small tumors which were difficult to identify under WLI.

Papillary peduncular tumor/Sessile tumor

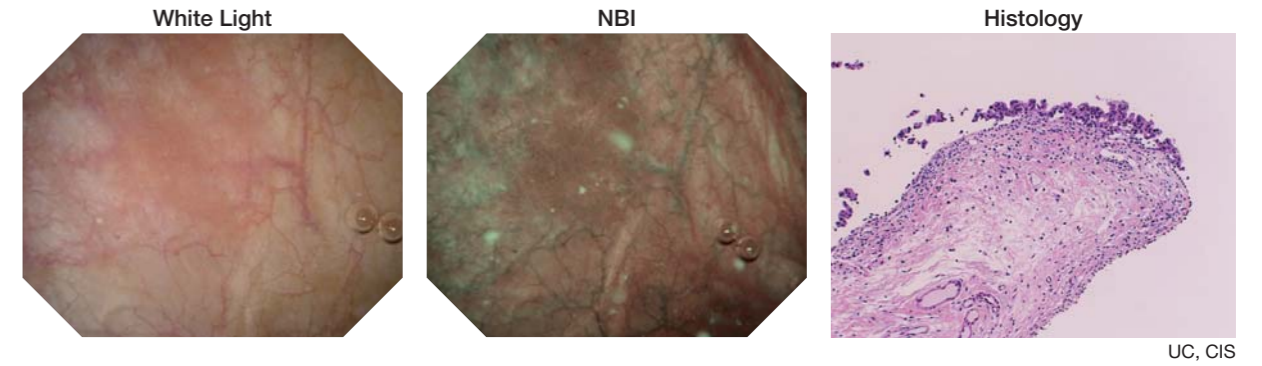
age 80, female



Comments
Reccurent tumor which occurs more often in bladder. Utilizing NBI enabled us to enhance visualization of marginal regions of the tumor.

Rubor mucosa

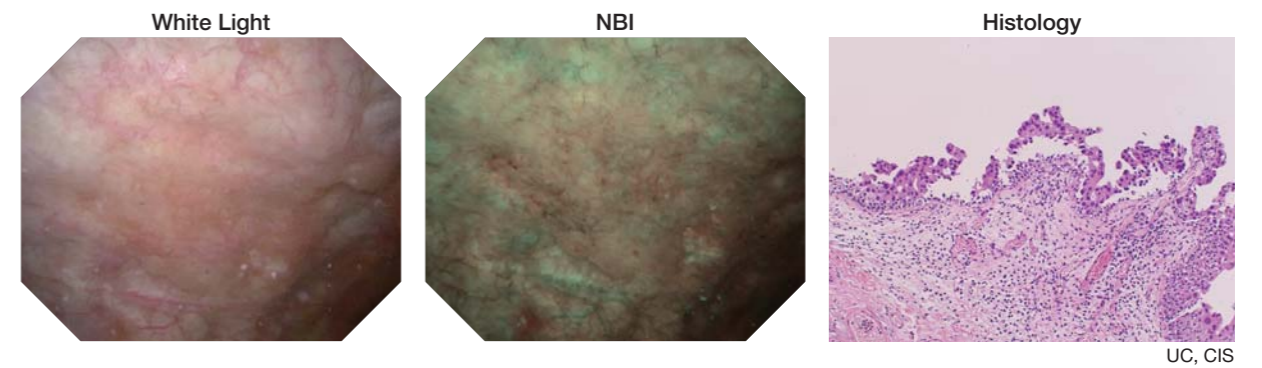
age 81, male



Comments
Bladder CIS. Utilizing NBI enabled us to enhance visualization of marginal region.

Rubor mucosa

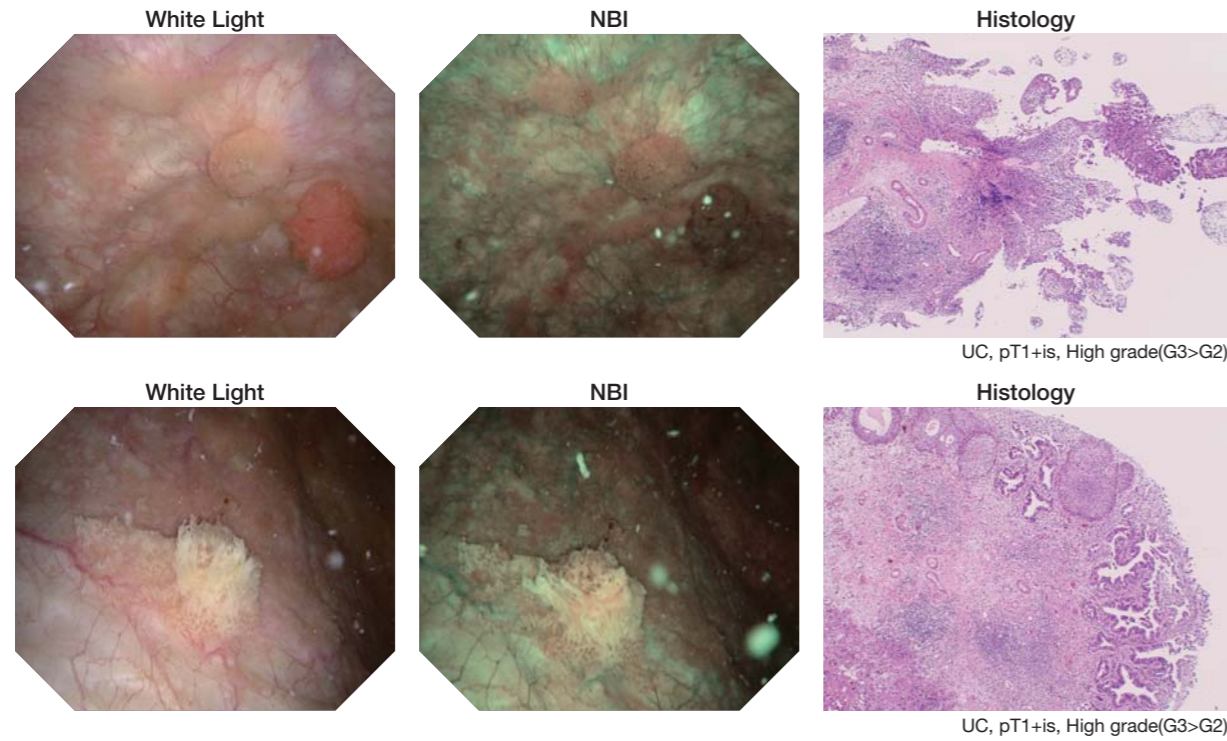
age 81, male



Comments
The case suspected carcinoma in situ and identified rubor bladder mucosa. Histopathologic examination revealed CIS.

Papillary peduncular tumor/Sessile tumor + rubor

age 81, male

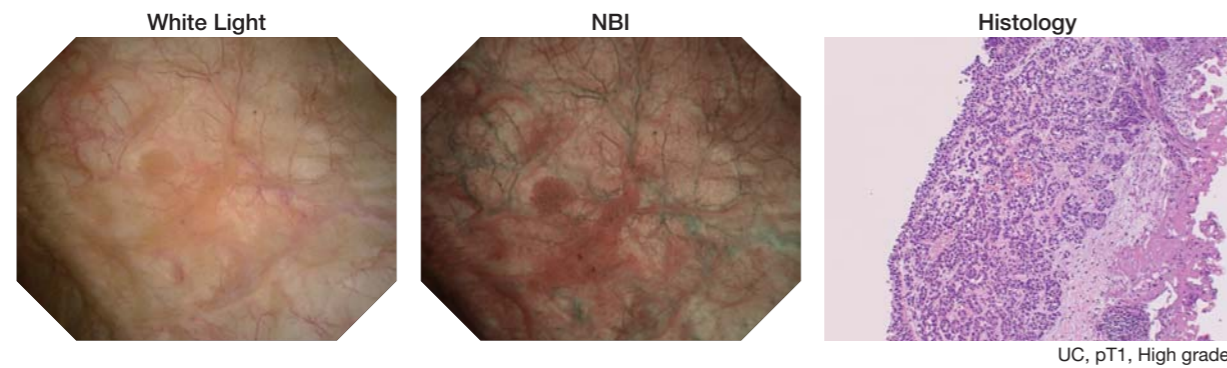


Comments

Utilizing NBI enabled us to visualize a papillary tumor and surrounding abberant mucosa more definitely. Histopathologic examination revealed T1+is.

Nodular sessile tumor

age 82, female

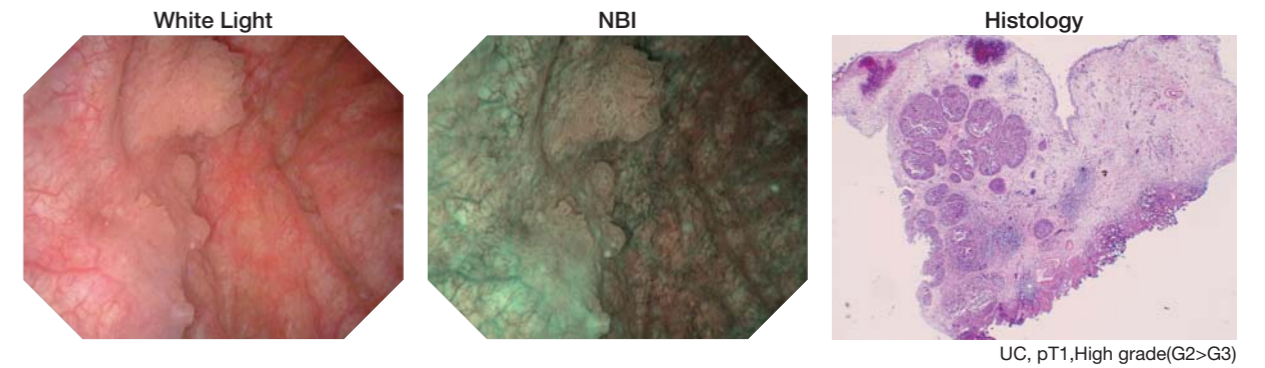


Comments

Short tumor which visualization of marginal region was unclear under WLI. Histopathologic examination of resected specimen revealed pT1.

Papillary peduncular tumor/Sessile tumor

age 84, male

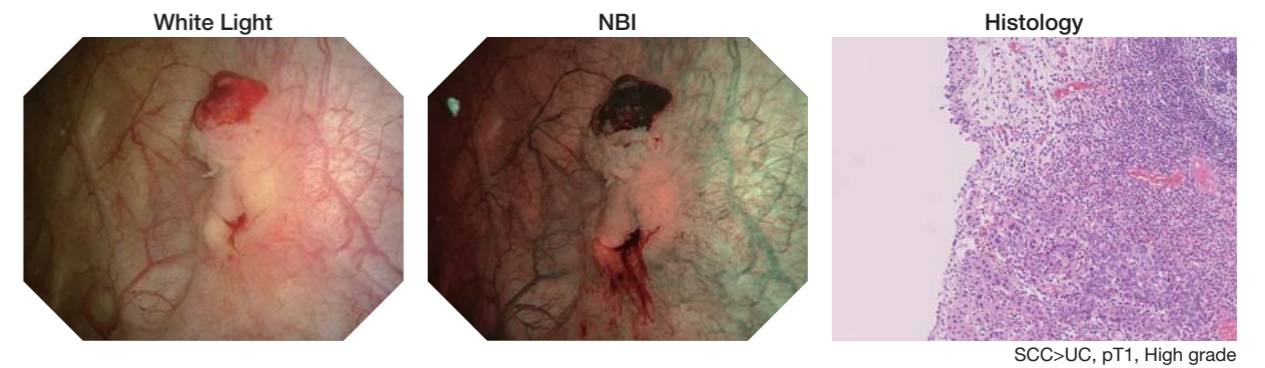


Comments

In this case the TUR specimen was T1, high grade. Utilizing NBI enabled us to enhance visualization of marginal region.

Nodular sessile tumor

age 78, male

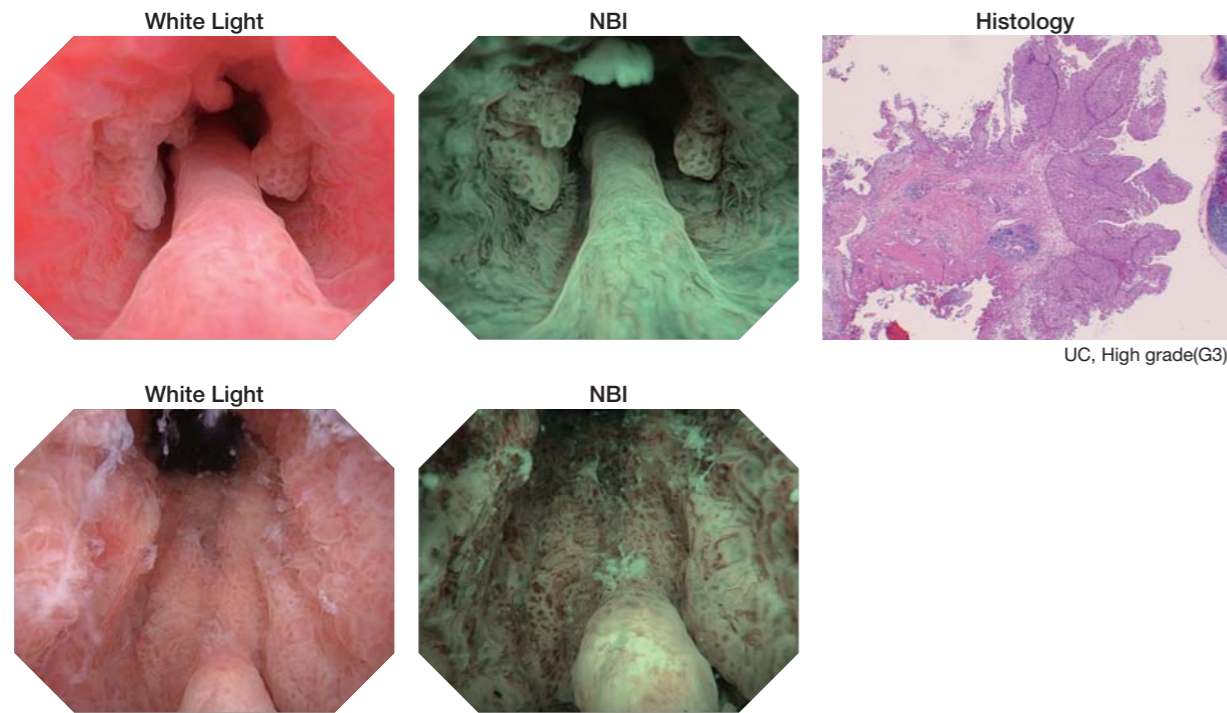


Comments

Nodular tumor with partial ulceration. Utilizing NBI enabled us to enhance visualization of marginal region.

Papillary sessile tumor

age 87, male

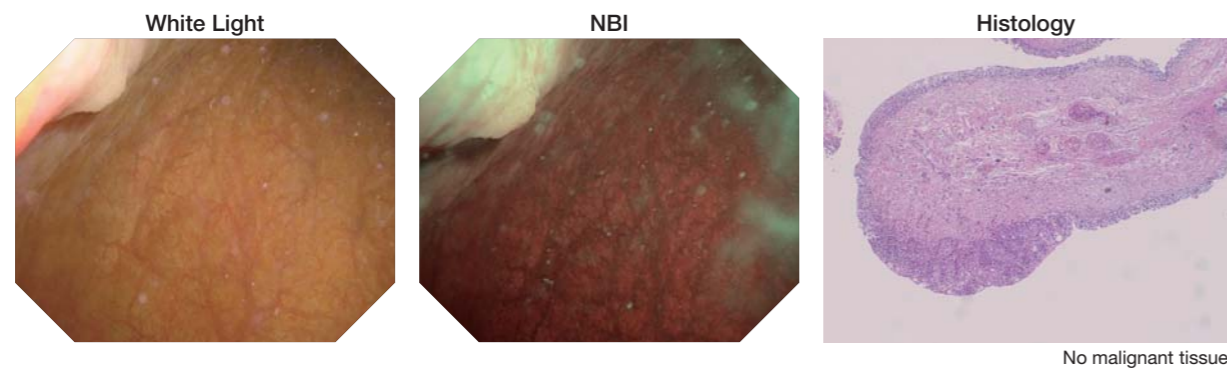


Comments

Advance to prostatic part of urethra of invasive bladder cancer. Low grade papillary tumor. Nodular tumor.

Papillary sessile tumor

age 61, male

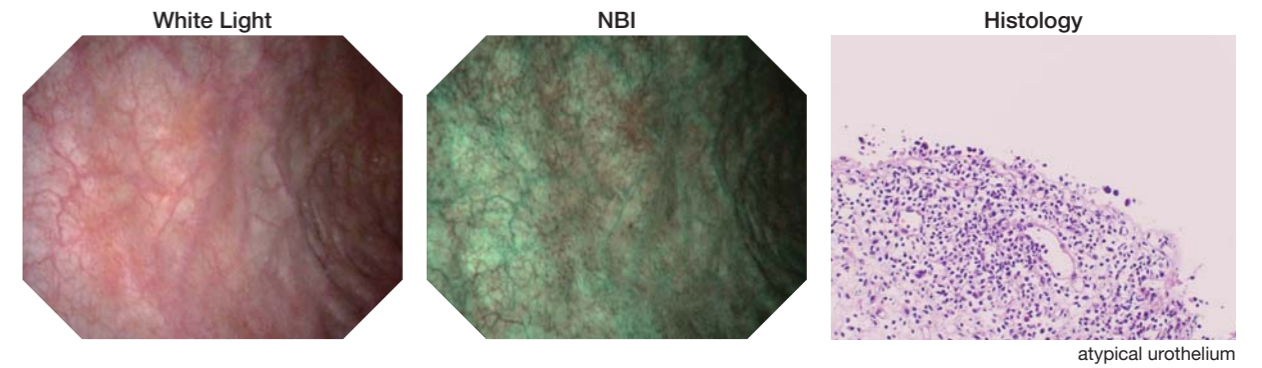


Comments

Papillary change on front side wall near bladder neck. Not malignant by biopsy.

Right side wall rubor

age 84, male

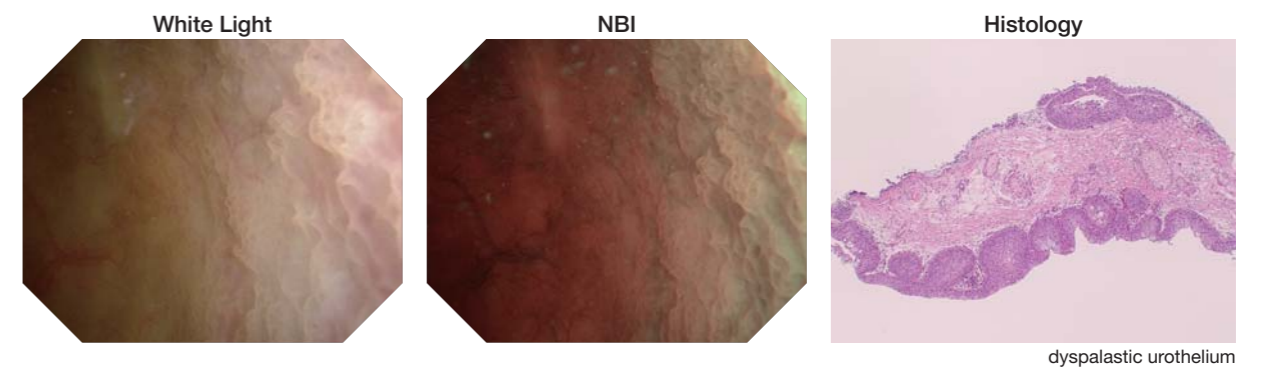


Comments

Minor rubor on side wall.

Velutinous mucosa

age 82, male

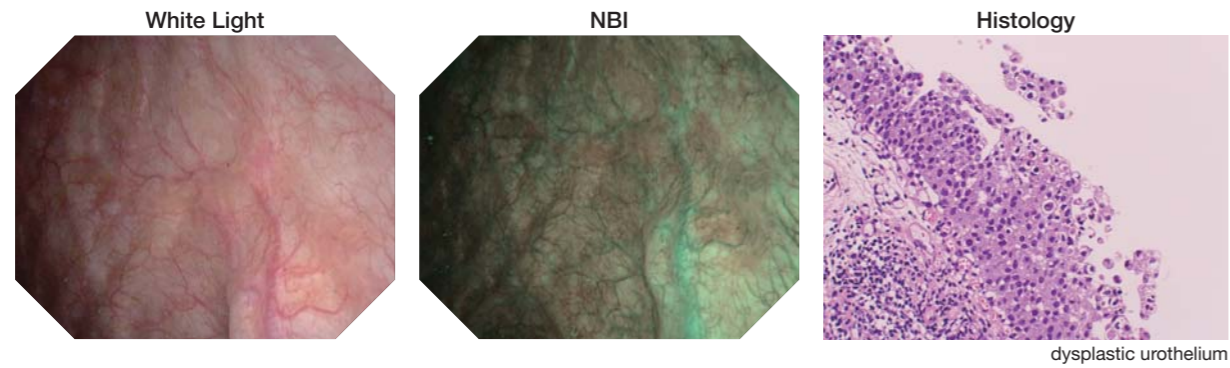


Comments

Velutinous mucosa biopsy.

Abnormal mucosa

age 84, male

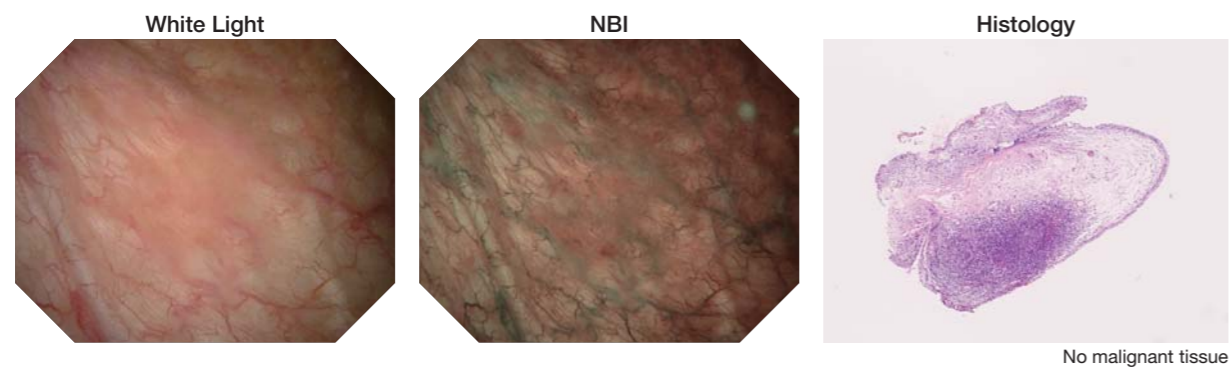


Comments

Abnormal mucosa on exterior left uretero orifice biopsy.

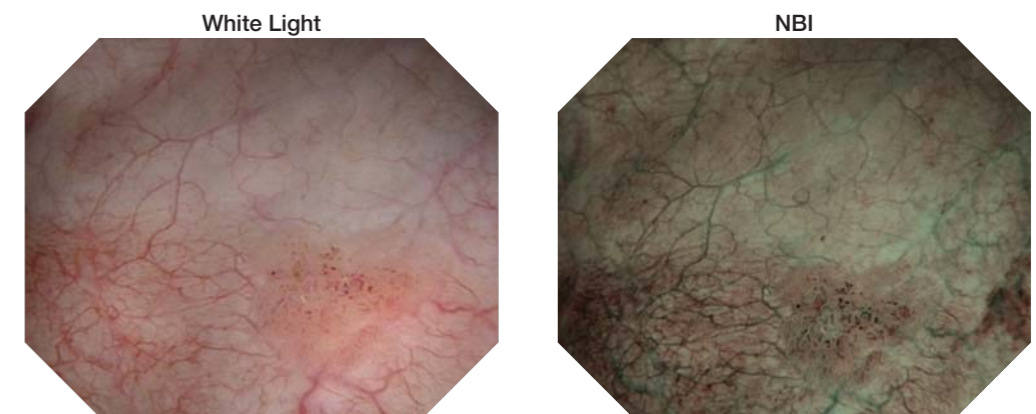
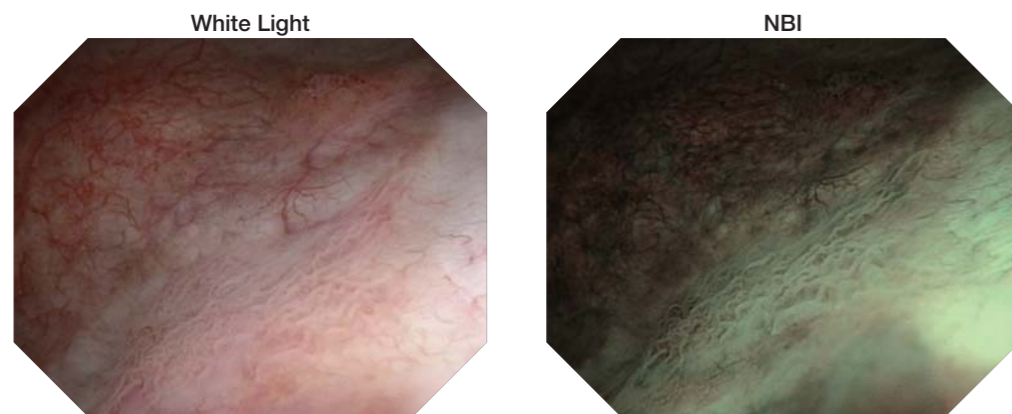
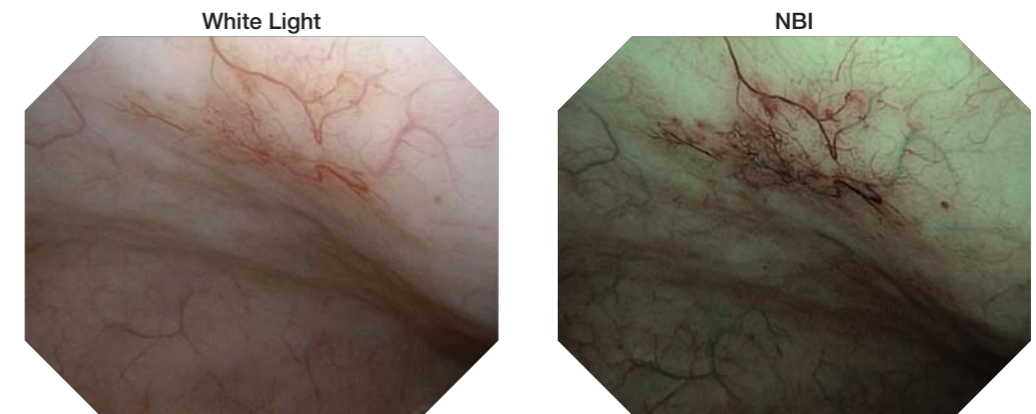
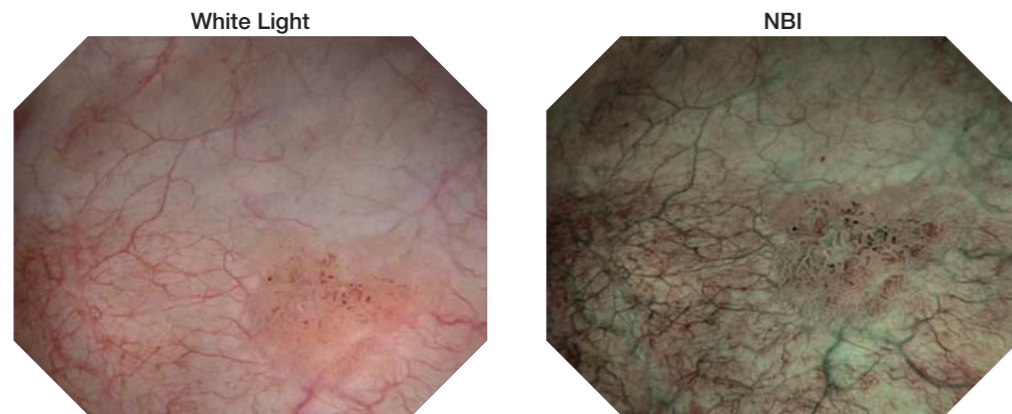
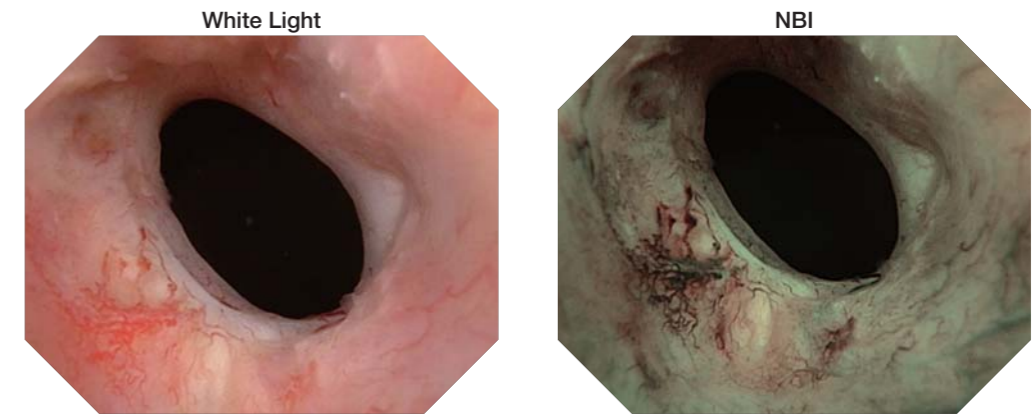
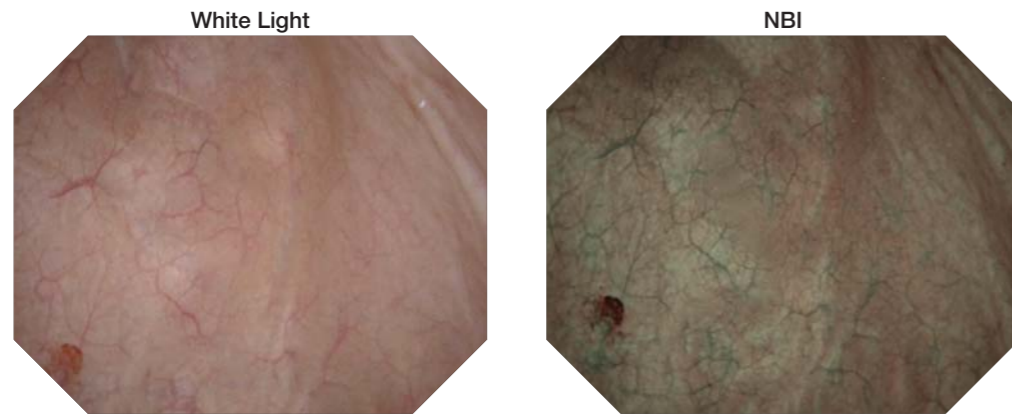
Minor vessel focusing

age 82, male



Comments

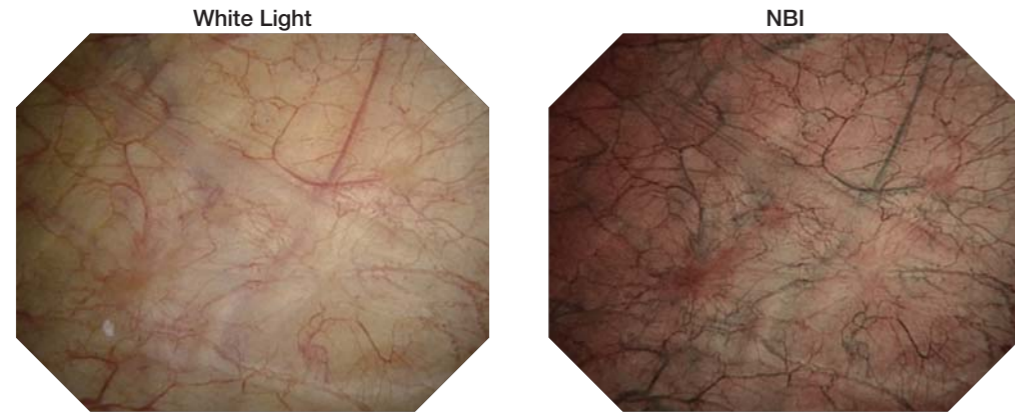
Minor abnormal vessel focusing.



Comments
Multiple papillary lesions, especially on the bladder trigone, posterior and anterior wall were visible with WLI. After NBI-enhancement, additional multiple papillary fields were visualized. Histology showed pTa, Low grade (G1).

Multiple papillary tumors

age 88, male

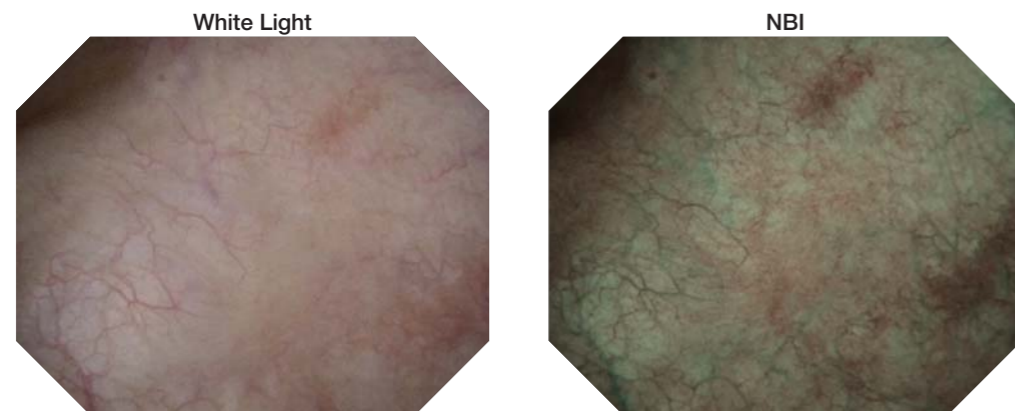


Comments

Multiple papillary lesions, especially on the left bladder wall and behind the right ostium, clearly visible after NBI-enhancement. Histology showed pTa, Low grade (G1).

Congestive mucosa of the bladder's trigone

age 28, female

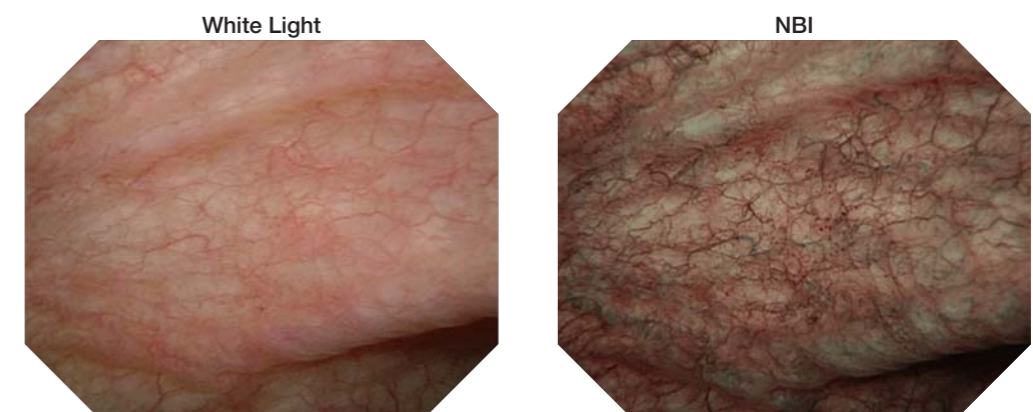
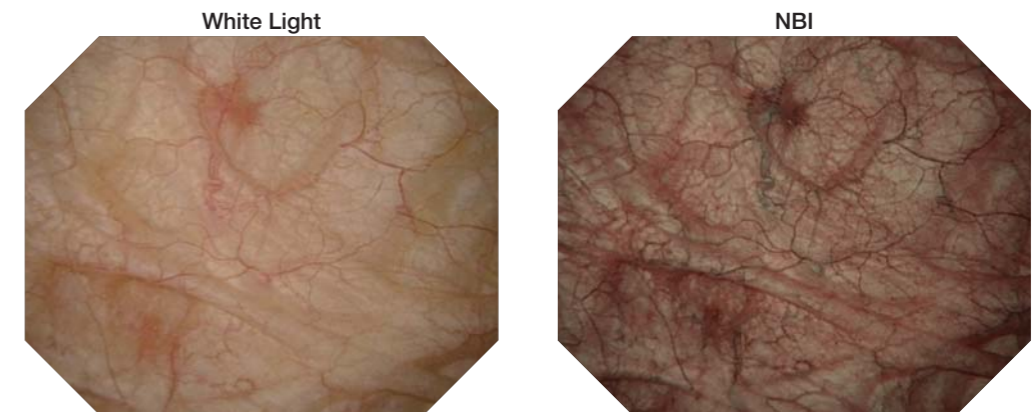
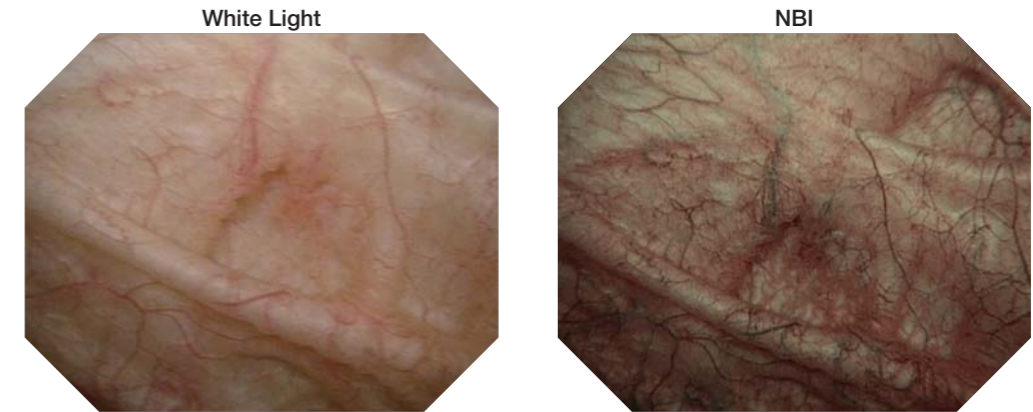


Comments

Congestive mucosa of the bladder trigone. NBI enhances the hypervascularized area. Histology showed pTa, Low grade (G2).

Flat Lesion

age 69, male

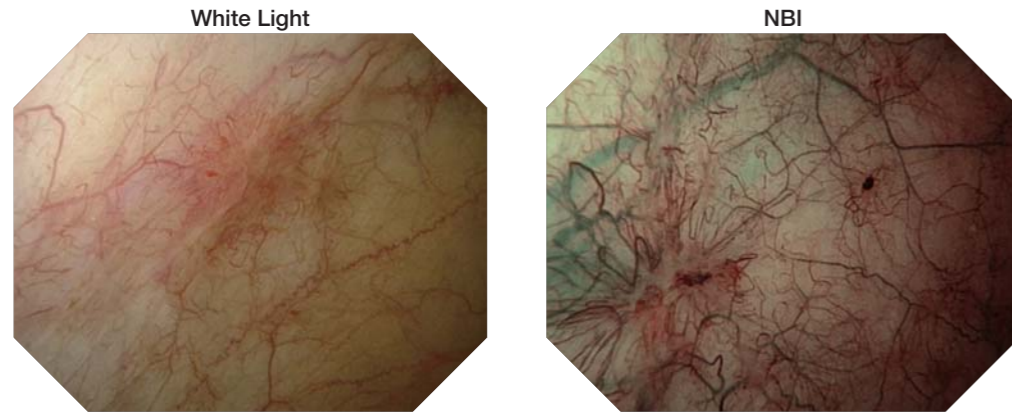


Comments

Suspicious superficial lesions adjacent to the right ostium, visible after NBI-enhancement. Histology showed pTa, Low grade (G2).

Relapse Bladder Cancer

age 73, male

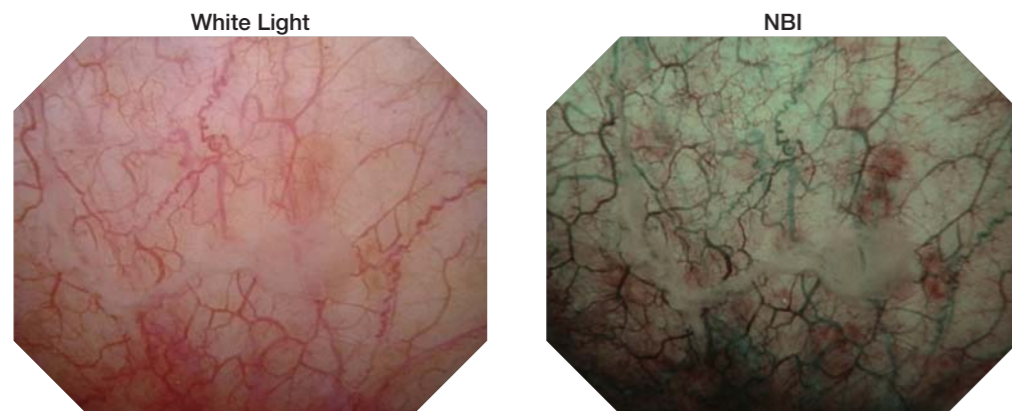


Comments

A flat tumor evidenced by NBI which was seen as a scar in WLI. Histology showed pTa, High grade.

Relapse Bladder Cancer

age 71, male

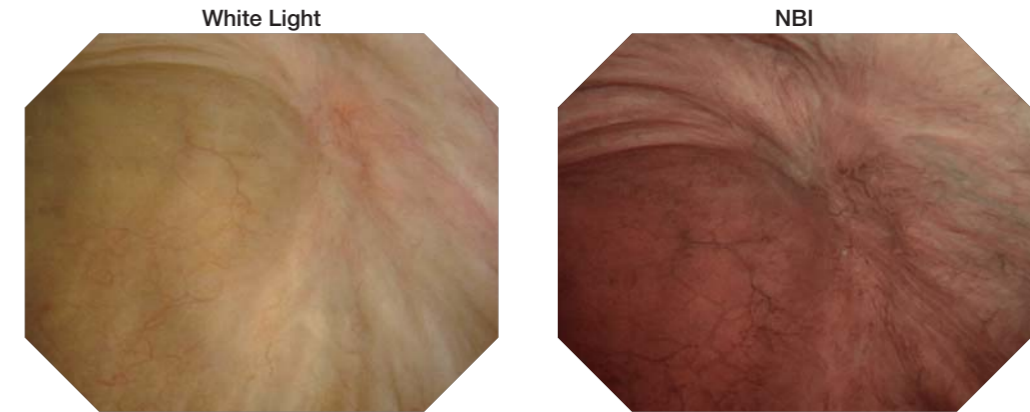


Comments

A low grade recurrence which was missed in WLI after BCG topic therapy. Histology showed pTa, Low grade.

Relapse Bladder Cancer

age 48, male

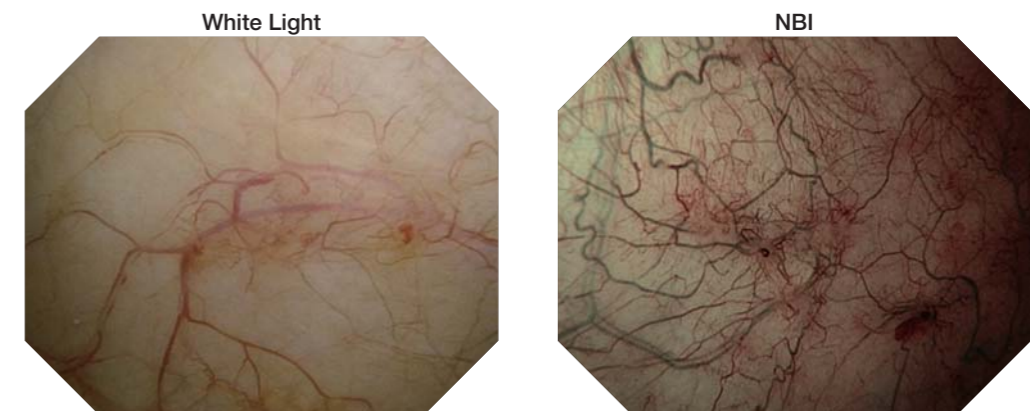


Comments

A high grade recurrence which was missed in WLI (no adjuvant instillation). Histology showed pTa, High grade.

Relapse Bladder Cancer

age 73, male

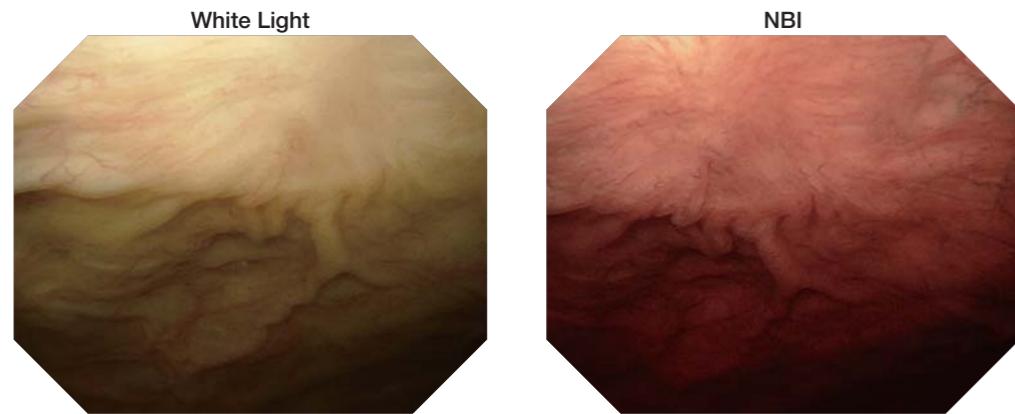


Comments

A recurrence which was missed in WLI. Histology showed pTa, Low grade.

Relapse Bladder Cancer

age 64, male

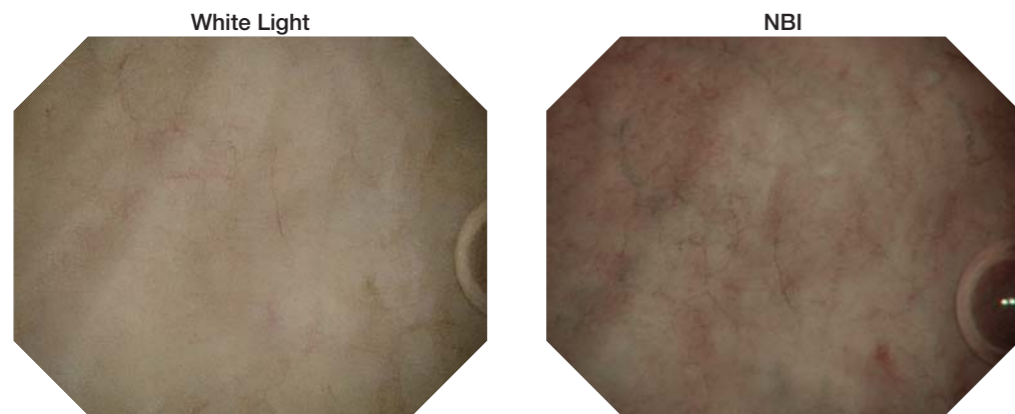


Comments

A high grade recurrence which was missed in WLI after BCG topic therapy. Histology showed pTa, High grade.

Flat Lesion

age 53, female

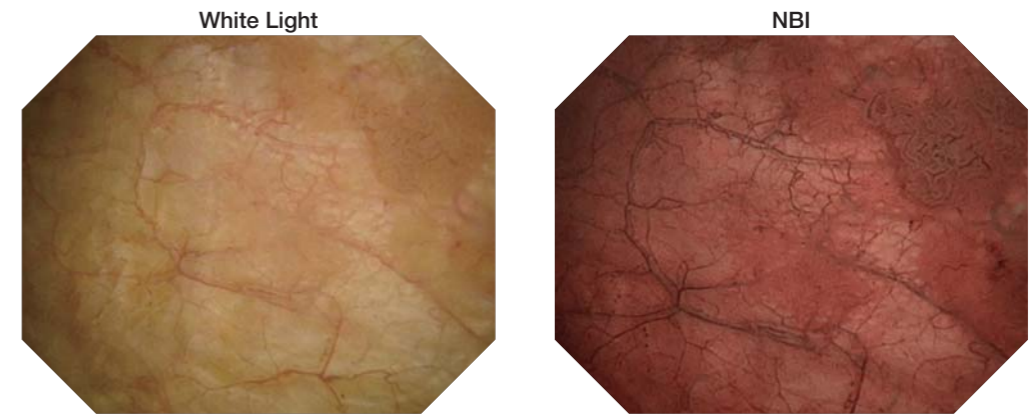


Comments

Patient with positive urine cytology and negative standard WLI cystoscopy (history of high grade non invasive bladder cancer). The red areas evidenced by NBI were then biopsied and CIS was found. Histology showed CIS.

Papillary peduncular Tumor

age 67, male

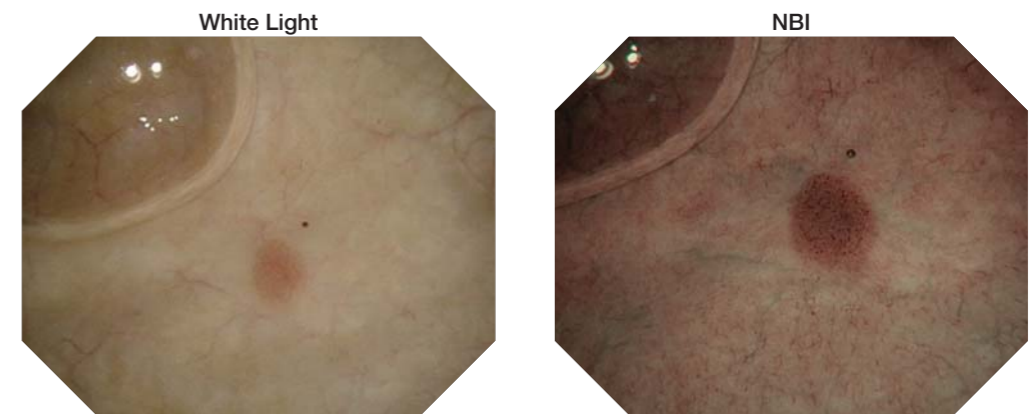


Comments

An area of micro-papillary tumor was completely missed by WLI, but was enhanced with NBI, with the vascular cores of the papillary structure showing a characteristic "speckled appearance. Histology showed pTa, Low grade.

Papillary sessile tumor

age 80, female



Comments

Micro Papillary Flat Tumor. An area of tumor was shown as a "red patch" by WLI but was enhanced with NBI in patient submitted to BCG topic therapy. Histology showed pTa, High grade.

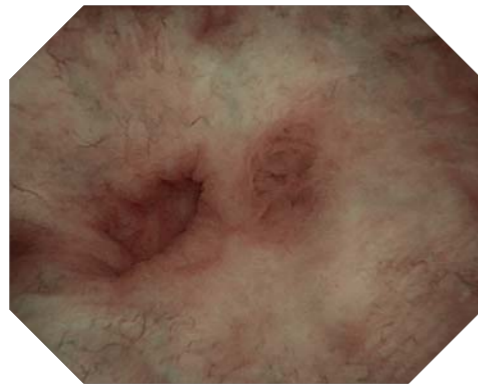
Papillary sessile tumor

age 57, male

White Light



NBI



Comments

Early papillary tumor. A recurrence which was overlooked under WLI inspection and was enhanced by NBI. Histology showed pTa, Low grade.

Memo

