

Is 3 months following focal laser therapy for localised adenocarcinoma of the prostate with ProFocal-Rx™ adequate to assess histopathological changes?

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Introduction and Objectives:

Focal laser therapy is currently considered a novel treatment option for patients with localised prostate cancer. A post treatment biopsy is recommended to assess the outcome, but no optimal time for this has been identified. ProFocal-Rx™ (focal laser therapy) is a novel minimally invasive therapeutic option for patients with localised adenocarcinoma of the prostate. Little is known about the histological findings in prostate biopsies seen within 3 months from ProFocal-Rx™ treatment.

Methods:

We examined the histological changes in prostate biopsies of 10 consecutive prostate cancer patients who were previously treated with ProFocal-Rx™ (focal laser therapy). Inclusion criteria included Gleason score of 7 or less, intermediate risk prostate cancer, clinical stage 2c or less, and aged 50-80 years old, with an estimated survival of 5 years or greater. Prostate biopsies from both treatment and non-treatment zones were obtained within 3 months following therapy and analysed histologically. Immunohistochemical staining was performed to assess AMACR, p63 and 34BetaE12 to assist characterisation of therapeutic changes.

Results:

Biopsies from targeted therapy zones demonstrated signs of necrosis. Areas of

necrosis, inflammation, granulation, atrophy, haemorrhage, corpora amylacea, haemosiderin deposition, haemorrhage and basal cell hyperplasia were commonly noted consistent with prior laser therapy. Benign fibroglandular prostatic tissue and adenocarcinoma could be clearly demonstrated in biopsies of targeted sites, allowing for easy differentiation. Peripheral biopsies in non-therapy zones demonstrated benign fibroglandular prostatic tissue. Adenocarcinoma demonstrated expression of AMACR on immunohistochemical staining, whilst regenerative benign glandular tissue expressed p63 and 34BetaE12 within biopsy specimens.

Conclusions:

ProFocal-Rx™ induces a spectrum of morphological changes, demonstrable with light microscopy and common immunohistochemical staining techniques consistent with targeted laser therapy. Prostate biopsies performed within 3 months following ProFocal-Rx™ therapy enabled routine histologically to differentiate of therapeutic stromal changes, benign and malignant prostate tissue. We recommend that patients who have undergone focal laser therapy with ProFocal-Rx™ to have their confirmatory post treatment biopsy within 3 months to assess treatment success and prevent delay in any triaging for future management.

Histological Feature	N=x
Features within all biopsies	
Chronic inflammation	10
Oedema	10
Granulation tissue	10
Coagulative necrosis	8
Haemosiderin deposition	6
Adenocarcinoma	5
Acute inflammation	3
Haemorrhage	2
Hyalinisation	0
Granulomatous inflammation	0
Fibrosis	0
Atypical fibroblasts	0
Calcification	0
Features within benign tissue biopsies	
Atrophy	6
Basal cell hyperplasia	4
Corpora amylacea	3
Squamous cell metaplasia	1
Eosinophilic granular secretion	0
Cytoplasmic vacuolisation	0
Mucinous metaplasia	0
Treatment related atypia	0

Table 1. Histological change presence in biopsies per patient

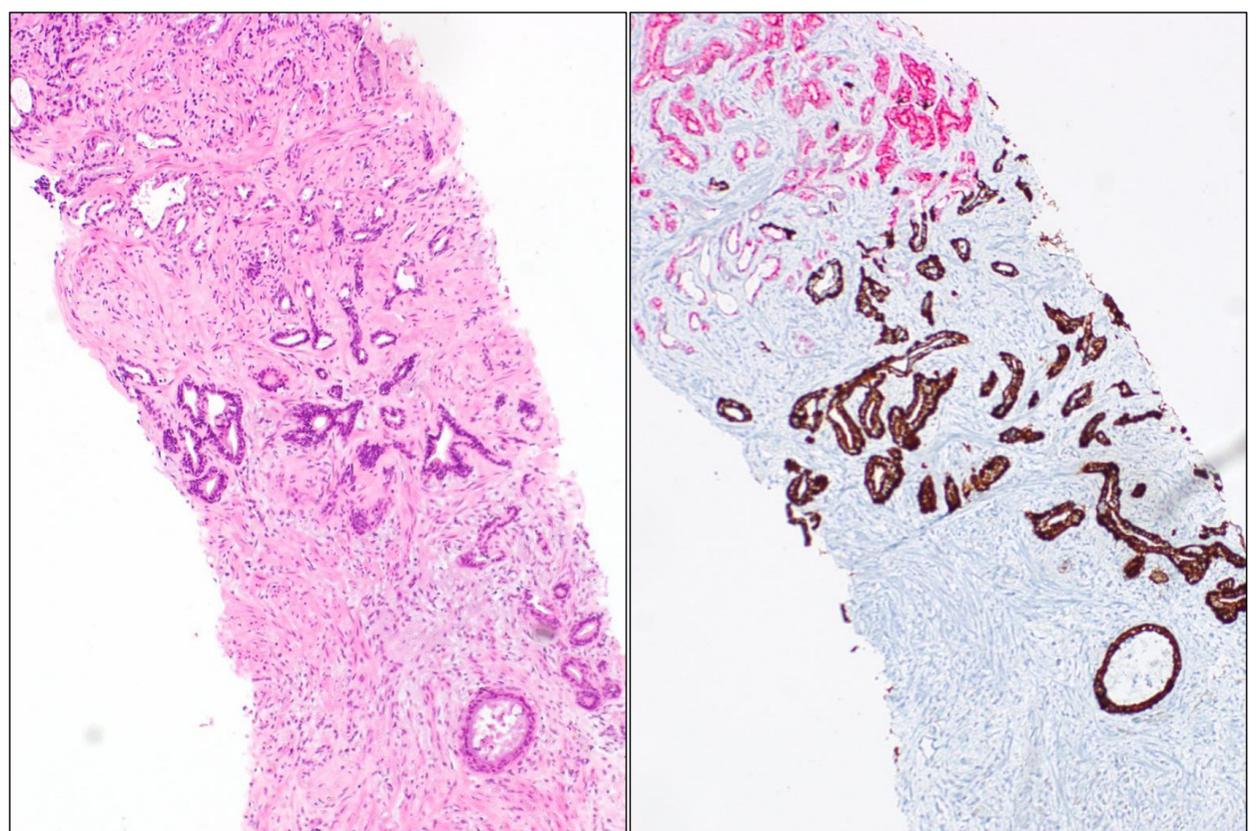


Figure 1. x100 magnification H&E and immunohistochemistry (AMACR, p63 and 34betaE12) study demonstrating differentiation of granulation tissue, benign glandular tissue and adenocarcinoma at 3 months.