PHOTODYNAMIC THERAPY FOR ESOPHAGEAL CANCER

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INTRODUCTION

Photodynamic therapy (PDT) has been a viable option for esophageal squamous cell carcinoma (SCC) for 5 decades.

PDT is effective as ablative and/or palliative therapy for esophageal adenocarcinoma (EAC) and SCC.

PDT has the potential of treating early stage EAC.

PDT DELIVERY

PDT delivery occurs over three steps with 2-3-day intervals between each step : Porfimer infusion, the 1st PDT session, and then the 2nd PDT session.

Porfimer (Photofrin), the photosensitizing agent, is administered intravenously in 2 mg/kg dosages.

PDT sessions are given with light fiber delivering 630 nm laser beam. The laser activates the Porfimer, leading to a cytotoxic effect.

Laser probe length ranges from 1.5-2.5 cm and has a depth penetration of about 5 mm.

Each PDT session lasts for approximately 10 minutes.

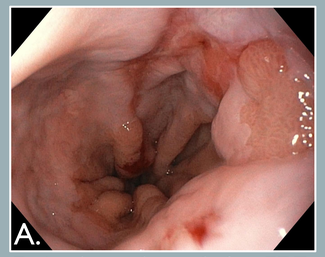
METHOD

We observed a retrospective chart review of the 9 patients who were offered PDT as a treatment from January 2021 to December 2022.

These patients had persistent disease after endoscopic resection.

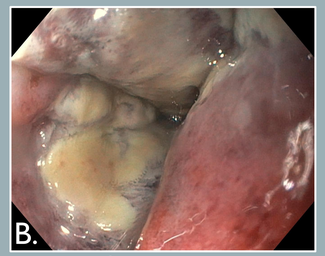
All patients had follow-up esophagogastroduodenoscopies (EGD) every 3-4 months; some had endoscopic mucosal resections (EMR) if there were suspicious lesions.

Adjunctive treatments were performed due to persistent carcinoma or high-grade dysplasia (HGD).

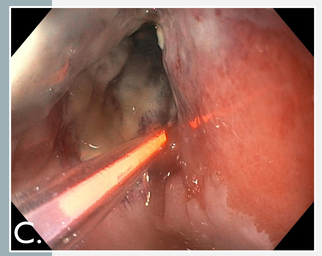


Patient's esophagus before PDT treatment (T1a tumor).

	All patients	PDT-only patients
Mean Survival (weeks)	89	79
Median Survival (weeks)	78	59



During 2nd PDT treatment, displaying tissue necrosis from the 1st session.



Laser next to the tumor during 2nd PDT treatment.

Pt	Sex	Age	Histology	Stage finding	Comorbidities	1st dose PDT	2nd dose PDT	Follow-up	Adjunctive Treatments	Complications	Survival (Weeks) with Ongoing Treatment
1	M	63	WD AC	pT1a	BMI >35, emphysema, chronic pain syndrome	1/6/21		EGD, EMR	None		154
2	M	81	WD AC	pT1a	Hypertension, chronic renal failure, bladder cancer	9/8/20	8/10/21	EGD, EMR	Chemoradiation	Esophagitis	169
3	M	68	WD AC	pT1a	Coronary artery disease	9/6/21		EGD, EMR	RFA x2	Barrett's esophagus	127
4	M	61	MD AC	pT1b	Adrenal insufficiency, hypertension, sleep apnea	4/23/21		EGD	Esophagectomy	Stricture, ampullary mass w/ dysplasia	78
5	M	70	MD AC	pT1b	BMI >30, vasculitis	1/7/22		EGD	None		35 (Deceased)
6	M	57	MD AC	pT1a	Hypertension	6/28/22		EGD, endoscopic ultrasound, CT scan	Esophagectomy	Dysphagia, anastomosis dehiscence, esophageal stent placement/ removal, abdominal pain, inflammation	82
7	M	70	WD AC	pT1a	Spinal cord injury, sleep apnea, venous ulcer	11/22/21		EGD	None		39
8	M	85	SC HGD	N/A	Diabetes mellitus, hypertension, chronic pain	10/20/21		EGD	None	Inflammation, recurrent stricture	43
9	M	83	MD AC	pT1a	Myasthenia gravis, diastolic dysfunction	8/17/22	12/14/22	EGD	RFA x2	HGD after 1st RFA	74

CONCLUSION

- PDT may be useful for early EAC in selected patients.

- Close follow-up protocol is needed to detect persistent disease.

- PDT does not deter adjunctive salvage therapies (e.g., repeat PDT, surgery, chemoradiation).

- Salvage therapy can improve survival.

- PDT does not appear to have detrimental effects on survival.