Study, country	Study type, study period	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures and effect size	Additional comments
Srinivasan (1994) UK	Observational study (appears retrospective) 1982-1989	41 patients T3-4, Grade 2-3 TCC treated by palliative radiotherapy, presenting with haematuria and local pain	19 patients with reasonable PS (WHO grade ≤3) treated with conventional palliative treatment; 22 patients with poor performance status (WHO grade ≥4) accelerated radiotherapy. Mean age 78.4 years in 2-fraction group compared to 71.6 yrs in conventional group.	Conventional palliative treatment 4500cGy in 12 fractions over 26 days Both regimens used supervoltage photons. From 1984 volume was localised with CT.	Accelerated radiotherapy 1700cGy in 2 fractions over 3 days.	Not reported	**Improvement of pain:** 73% (16/22) 2-fraction, 37% (7/19) conventional RT. Disease was fatal in all patients **Overall survival:** Mean 9.77 months 2-fraction vs 14.47 months conventional	No pain data for 7 patients
Kouloulias 2013 Greece	Prospective observational study 2005-2011	58 patients with organ-confined (cT1-2, N0) bladder cancer. All inoperable, with poor PS, >75yrs. Excluded previous pelvic RT or cystectomy, LN mets, distant mets or hip prosthesis.	Median age: 77 (70-91) T1: 12 T2: 46 PS 60-70%: 10 PS 50-60%: 48 Male/female: 47/11	Hypofractionated 3DCRT-virtual CT planning used. Clinical target volume (the bladder) and planning target volume obtained by expanding CTV with a margin of 1cm in each direction and of 0.5cm posteriorly. Entire bladder was treated using 4-field technique with 15 MV x-ray energy beams. 36Gy in 6 weekly fractions.	N/a	3 months after RT treatment	**Acute Grade 1-2 GI toxicity:** 13/58 (22%) **Acute Grade 1-2 GU toxicity:** 19/58 (33%) No grade 3 or higher GI or GU toxicity. **Patient-reported pain:** VAS score improved from 4.2 (±1.1) to 1.8 (±0.6) ($p<0.001$).	
Caravatta 2012 Italy	Prospective observational study	27 patients with locally advanced cancer and metastatic disease, ECOG PS ≤3, no previous RT to same region.	Median age: 72 (47-86) Male: 11 (41) Female: 16 (59) ECOG PS 0: 7 (26) PS 1: 6 (22) PS 2: 9 (33.5) PS 3: 5 (18.5) Primary cancer site Gynaecologic: 48% Colorectal: 18.5%	Short course accelerated 3D conformal RT. CT planning used. Clinical target volume defined as primary tumour or metastatic site plus 1 cm margin. 1 cm margin in all directions added for planning target volume.	n/a	Median 6 months (range 3-28)	**Acute Grade 1-2 GI toxicity:** 5/27 **Acute Grade 1-2 GU toxicity:** 11/27 **Patient-reported pain:** 12 patients treated for pain control. Mean VAS score improved from 6 (±2) to 3 (±2.3) p=0.0002. 5 patients	Not all bladder cancer patients

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		12 patients received RT for pain control.	Genitourinary 33.5%	Patients received 14Gy (3.5Gy frations), 16Gy (4-Gy fractions), or 18 Gy (4.5Gy fractions) in 3 dose levels. Patients underwent RT on 2 consecutive days with twice-daily fractionation, with an interval of ≥8 hrs between fractions.			(41.7%) had complete pain relief, 6 patients (50%) showed more than 30% VAS reduction. 8 (66%) reported a reduction in pain score and 9 (75%) reported a reduced drug score. 1 of 4 patients discontinued opioid analgesic therapy. **Quality of life (Cancer Linear Analog Scales):** well-being, fatigue, ability to perform daily activities. 13 patients completed QOL VAS ranking. No significant differences between baseline and post-treatment, though improvement in all indexes was noted.	
Albers 2002 Germany	Prospective non-comparative phase 2 study 1998-1999	N=30, proven, measurable recurrent or progressing TCC, prior cisplatin-based chemo. No prior gemcitabine, chemo or RT within 4 weeks prior to study, no karnofsky PS <40, adequate liver and renal function.	86% prior radical surgery with adjuvant MVAC/MVEC or CM, 7% cystectomy with neoadjuvant MEC, 7% primary MVEC/MVAC without radical surgery 40% regional lymph node and distant metastases, 26% regional lymph nodes only, 26% distant mets only 28 patients evaluable for response and toxicity,	Gemcitabine 1250mg/m2 on day 1 & 8 of a 21-day course i.v. 30 mins. Maximum 6 courses (18 weeks) 9/28 completed 6 courses of treatment, 15 did not receive maximum number due to progression, 4 dropped out due to toxicity or personal reasons	n/a	Mean 8.4 months (0-25.3)	**Toxicity:** 36% (10/28) Grade 3-4 Leukocytopenia, 11% (3/28) thrombocytopenia, 11% (3/28) anemia, 11% (3/28) Grade 3 vomiting, 11% pulmonal toxicity, 3% (1/28) exanthema. 1 Grade 4 vomiting. **Quality of life (Spitzer index values 10-point scale):** In non-responders decreased from 7.8 ±2.4 to 6.7±2.2 at the end of treatment. In responders there was no change during treatment 8.0 ±1.6 before, 8.1 ±2.5 after. **Pain scale (7-point scale):** Non-responders showed decrease in pain values 5.3±1.8 to 4.8±1.5 (an increase in pain). Responders showed	QoL Spitzer questionnaire designed and validated for palliative care populations.

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							improvement in pain from 4.3±1.9 to 5.8 ±1.3 (p<0.05)	
Miyata 2012 Japan	Retrospective observational study 2003-2011	35 patients with metastatic and/or recurrent UC previously treated with cisplatin containing chemo	<table><tr><td></td><td></td></tr><tr><td>Median age</td><td>68</td></tr><tr><td>Male</td><td>26 (74%)</td></tr><tr><td>Female</td><td>9 (25.7%)</td></tr><tr><td>PS0</td><td>14 (40)</td></tr><tr><td>PS1</td><td>16 (46)</td></tr><tr><td>PS2</td><td>5 (14)</td></tr><tr><td>Primary tumour site</td><td></td></tr><tr><td>UUT</td><td>13 (37)</td></tr><tr><td>Bladder</td><td>21 (60)</td></tr><tr><td>both</td><td>1 (2.9)</td></tr><tr><td>Prior treatment</td><td></td></tr><tr><td>Chemo</td><td>8 (23)</td></tr><tr><td>Chem+surgery</td><td>17 (49)</td></tr><tr><td>Chem+Rad</td><td>6 (17)</td></tr><tr><td>ChemRad+ surgery</td><td>4 (11)</td></tr><tr><td>2nd line CT</td><td>31 (89)</td></tr></table>	All patients progressed after cisplatin based therapy. Low dose GP: Gem 700mg/m^2 i.v. for 30mins on day 1 and 8 of each 28 day cycle. Pac at 70mg/m^2 i.v. over 3h on day 1 and 8 of each 28-day cycle. Dexamthasone sodium phosphate (6.6mg), diphenhydramine hydrochloride (50mg) and ranitidine hydrochloride (100mg) were administered before treatment. Median 5 treatment cycles per patient.	n/a	Median 10 months (IQR 4-19)	**Pain relief (VAS scale):** Median abdominal/back pain median VAS score 4 (3-6) and all needed analgesics. After CT scores were 2 (1-3) (p<0.001). Improved pain scores (n=24, 69%), decrease in analgesic consumption (n=12, 34%). Decrease in analgesic consumption or decrease in VAS score without increasing analgesic dose 28/35 (80%). **Toxicity:** Grade 3-4 anemia (n=2, 6%), leukopenia (n=5, 14%), thrombocytopenia (n=2, 6%). Grade 3-4 Fatigue 0, nausea/vomiting (n=1, 3%), neuropathy 0, skin rash (n=1, 2.9%).	
De Leon-Casasola 1993 USA	Observational study (appears prospective)	26 patients with pelvic pain from colorectal or gynaecological cancers that was no longer controlled with opioids or excessive sedation or side-effects from opioids. Excluded allergies to phenol, life expectancy <1	<table><tr><td>Mean age</td><td>55±8 years</td></tr><tr><td>Gynae cancer</td><td>22 (77%)</td></tr><tr><td>Prostate cancer</td><td>4 (15%)</td></tr><tr><td>Colorectal</td><td>2 (7%)</td></tr></table>	Hypogastric plexus block: Contrast medium used to determine accurate placement of needles. All underwent diagnostic block with 8ml 0.25% BUP injected through each needle. If 70% reduction in pain intensity a neurolytic block performed on following day. For neurolysis 8ml of 10% phenol (dissolved in sterile water) was used on each side. Criteria for success of	n/a	NR	**Pain relief (Visual Analog Pain Scale 0-10):** All patients 10/10 (worst pain) before block despite oral opioid therapy. Morphine sulphate mean was 953±722 mg/day before block to 420±354 2wks after block (p<0.0001). Patients in the success group were using sig less daily oral MS than patients in failure group (736±633 versus 1443 ±703 mg/day, p=0.02). % reduction in usage = 67% in success group and 45% in failure group. Overall 18 (69%) had satisfactory pain relief after 1	No bladder cancer patients. Length of follow-up not reported.

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		mo, patients receiving RT/CT		block: 1)decrease in VAPS of at least 70% or pain intensity of less than 3 to 10 during first two weeks after neurolytic block. 2)decrease in opioid requirements of at least 30% resulting in disappearance of bothersome side-effects 2 wks after block. Patients with failed blocks after 2 consecutive attempts received continuous epidural BUP morphine.			or 2 procedures with a VAPS of ≤3. **Complications;** No intraoperative complications. No long-term complications.	
Gamal 2006 Egypt	Prospective observational study	30 patients with pelvic pain due to cancer and had been treated with analgesic medication according to WHO guidelines and still had pain on VAS >4 (0-10, worst pain)	<table><tr><td></td><td></td></tr><tr><td>Male</td><td>14 (47%)</td></tr><tr><td>female</td><td>16 (53%)</td></tr><tr><td>Mean age</td><td>59</td></tr><tr><td>Pain duration (mo)</td><td>5.4-6.1</td></tr><tr><td>Primary cancer site</td><td></td></tr><tr><td>Rectum</td><td>5 (16%)</td></tr><tr><td>Cervix</td><td>8 (27%)</td></tr><tr><td>Bladder</td><td>9 (30%)</td></tr><tr><td>endometrial</td><td>8 (27%)</td></tr></table>Patients with no contraindications to regional blockade and sympathetic blockade.	Superior hypogastric block: patients randomised into two groups - transdiscal approach (n=15) or block via classic posterior approach (n=15).	Transdiscal versus posterior approach	3 months	**VAS pain scores:** Scores decreased from baseline at 24h, 1 week, 1 month and 2 months after block ($p<0.05$). At 3 months there was no difference from baseline. No differences between the two groups at any timepoint. Daily morphine consumption decreased in both groups from baseline up to 2 months after block. No differences between 3 month and baseline. **Complications:** In the classic group: Intravascular puncture (n=2, 13%), urinary injury (n=4, 27%)	No details about randomisation to two groups.
Plancarte 1997 Mexico/USA	Prospective observational study	227 patients with pelvis pain and gynaecological, colorectal or	Excluded patients with anticoagulopathies, allergies to phenol, life expectancy <3 months, concurrent rad/CT or scheduled to receive treatment within 4 wks of	Superior hypogastric plexus block: L4-L5 intervertebral space was found and marked. Patient sedated. Accurate placement of	n/a	6 months	**Patient-reported pain:** Preblock VAS score 8-10 (n=159, 100%). No patients had score 8-10 post-block. Postblock VAS score 4-7 (n=60,	Oral morphine therapy not available in Mexico when

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		genitourinary cancer who had poor pain control – failed opioid therapy or excessive side-effects/sedation.	block, purely somatic and/or neuropathic pain. 159 (79%) had a positive response to diagnostic block and therefore available for neurolytic block. Mean age =48 years. 89% were women with gynaecological cancers, 17 males with prostate, colorectal or bladder carcinoma.	needles determined by collection of contrast medium just anterior to the L5-S1 intervertebral space. All patients had diagnostic block with 8ml of 0.25% bupivacaine injected through each needle. If patient reported a 50% reduction in pain intensity for 4 hrs, a neurolytic block was done on the following day. If patients failed to derive a benefit from this technique they were removed from study and offered epidural analgesia. For neurolysis 8ml of 10% phenol used on each side, dissolved in sterile water.			38%), score <4 (n=99, 62%). Overall 115/159 (72%) who responded to diagnostic block had satisfactory pain relief after one or two procedures. This is 51% (115/227) overall response for eligible patients **Complications:** No intraoperative complications, no long-term complications.	study was done. Mostly gynaecological cancers.
Plancarte 1990 USA/Mexico	Prospective observational study	28 patients – 22 female , 5 male	Mean age 36 years. All had chronic lower abdominal pain with a prominent visceral component, secondary to advanced cancer. (20 cervix, 4 prostate, 1 testicle, 1 post-radiation cystitis) Persistent pain despite radiotherapy, chemotherapy, non-opioid and opioid analgesics, and behavioural pain management.	Superior hypogastric plexus block: Location of L4-l5 interspace was located. Block used for either diagnostic/prognostic or therapeutic purposes. For diagnosis 6-8ml 0.25% bupivacaine was used. For therapeutic (neurolytic) blocks a total of 6-8ml 50% alcohol through each needle	n/a	Monthly until death	Visual and verbal analogue scales used to measure pain immediately before block and after at 30 mins, 1,2,4,5 and 24 hr, then monthly until death. **Patient-reported pain:** Mean reduction in pain of 70% was observed, residual pain seemed generally of somatic origin. Injections of epidural steroids, serial injections of 2-3% epidural phenol and or non-opioid analgesics used to control remaining somatic pain resulting in a global reduction of pain scores by 90%. No	Outcomes poorly reported. No mean scores. No bladder cancer patients.

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							return of pain in all but two patients.	
Cariati 2002 Italy	Observational study (appears prospective) 1995-2000	10 patients with pelvic malignancy and chronic severe pain which could be controlled only with high doses of NSAIDs	4 rectum/sigmoid adenocarcinoma, 3 uterine carcinoma, 2 bladder cancer, 1 secondary lesion of the right hip from laryngeal carcinoma. Nine treated with morphine sulphate, one with high levels of NSAIDs	CT-guided superior hypogastric neurolytic block with alcohol, using a single needle and anterior approach. All patients sedated before procedure. The first four patients had an injection of 10ml alcohol, 2 had 15ml and the last 4 patients had 20ml alcohol.	n/a	Not reported	**Complications:** No local complications such as hematomas, or puncture of vascular stricture. **Pain:** evaluated using a 4-grade subjective analogue scale (none, mild, moderate, complete). 4/10 Complete disappearance of pain lasting until patient death (60-160 days after procedure) and with no analgesics, 2/10 moderate reduction with no opioids, 3/10 mild reduction of pain (one died at 20 days, 2 had opioids restarted at 17 and 25 days). One patient had no benefit and restarted opioid treatment.	Mostly colorectal or uterine cancer.