

| Author | Study details | Study design | Patients | Tumour type | Stents used | Main outcome of study | Reported 30-day mortality | Associated variables with 30-day mortality |
|----------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------|
| Deviere, et al.[11], 1998 | Retrospective, single centre, France | Analysis of different drainage methods | N=64 Mean 72 years | Mixed (predominant CCA) | Plastic | Bilateral drainage, particularly in Bismuth types II/III tumours, improves median survival compared to incomplete drainage (176 days vs 119) | 17.2% | Unilateral stenting in patients with Bismuth types II/III |
| Chang, et al.[12], 1998 | Retrospective, single centre, USA | Comparison of survival between unilateral and bilateral drainage factoring undrained liver lobes following contrast opacification | N=141 81M: 60F Mean 70 years | Mixed (predominant CCA) | Plastic and SEMS (predominant plastic) | Best survival was observed in patients with bilateral drainage (225 days) and worst survival in patients with unilateral drainage and contrast opacification of both lobes (46 days) | 10% | Contrast opacification of undrained liver lobe |
| De Palma, et al.[16], 2001 | Prospective RCT, single centre Italy | Comparison between unilateral and bilateral drainage | N=157 77M: 80F Mean 73 years | Mixed (predominant CCA) | Plastic | Unilateral drainage was associated with higher technical success (88.6% vs 76.9%), lower complication rates (18.9% vs 26.9%) and lower incidence of early cholangitis (8.8% vs 16.6%) compared to bilateral drainage. Median survival did not differ between both groups (140 vs 142 days). | 9.2% | NA |
| Pinol, et al.[17], 2002 | Prospective RCT, single centre Spain | Comparison of ERCP with plastic stent and PTC with SEMs | N=26 | Mixed | Plastic (ERCP) and SEMS (PTC) | Trend towards higher technical success was observed in PTC (75% vs 58%). PTC group was associated with better therapeutic success | 42% (ERCP group) | NA |

| | | | | | | | | |
|----------------------------|---------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------|-------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| | | | | | | (71% vs 42%) but higher complication rates (61% vs 35%). Overall median survival was better in the PTC group (3.7 months vs 2.0 months). | | |
| De Palma, et al.[18], 2003 | Prospective uncontrolled study, single centre Italy | Assessing feasibility and efficacy of unilateral SEMS placement | N=61 40M: 21F Mean 63 years | Mixed (predominant CCA) | SEMS | The usage of SEMS was associated with high technical (96.7%) and clinical success (96.7%) rates. Median stent patency was 169 days and median patient survival was 140 days. | 0% | NA |
| Singh, et al.[19], 2004 | Prospective uncontrolled study, single centre India | Assessing feasibility of unilateral SEMS placement without use of contrast | N=18 7M: 11F Mean 54 years | NA | SEMS | Technical success was achieved in 100% of patients with no incidence of cholangitis. | 0% | NA |
| Saluja, et al. [14], 2008 | Prospective RCT, single centre India | Comparison between ERCP and PTC | N=27 8M: 19F Mean 50 years | Gallbladder cancer | Plastic | Therapeutic success was higher in the PTC group (89% vs 41%) with lower rates of cholangitis (11% vs 48%). There was no difference in 30-day mortality (4% vs 8%) and median survival (60days in both) | 8% (ERCP group) | Post-procedural cholangitis |
| Perdue, et al.[20], 2008 | Prospective, multicentre observational cohort study USA | Comparison of 30-day outcomes between plastic stent and SEMS | N=62 25M: 37F Mean 64 years | Mixed | Plastic and SEMS | Adverse outcomes at 30-day were more frequent in the plastic stent group (39.3% vs 11.8%). No difference in 30-day mortality was observed (plastic 14.3% vs SEMS 8.8%) | 11.3% | NA |

| | | | | | | | | |
|----------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------|-------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------|
| Pisello, et al.[13], 2009 | Prospective study with comparison with historical control cohort, single centre Italy | Comparison of cholangitis rate between contrast and air cholangiography | N=188 | CCA | Plastic | Cholangitis rates were lower in the air cholangiography group (3.1% vs 24.1%). 30-day mortality was similar in both groups (contrast 4.4% vs air 1.5%) | 3.2% | Post-procedural cholangitis |
| Chahal, et al.[21], 2010 | Retrospective, single centre USA | Assessing feasibility of stent-in-stent technique for bilateral SEMS | N=21 15M: 6F Mean 64 years | Mixed (predominant CCA) | SEMS | Technical success was achieved in 100% of patients. Early (5%) and late (33%) stent occlusions required endoscopic intervention. Median survival was 6.1 months. | 10% | NA |
| Sangchan, et al.[22], 2012 | Prospective RCT, single centre Thailand | Comparison of successful drainage rates between plastic stent and SEMS | N=108 86M: 22F Mean 60 years | CCA | SEMS and plastic | Successful drainage (70.4% vs 46.3%) and median survival (126 days vs 49 days) was higher in the SEMS group. 30-day mortality was similar in both groups (SEMS 24.1% vs plastic 33.3%) | 28.7% | NA |
| Law, et al.[23], 2013 | Retrospective, single centre USA | Comparison of stent-in-stent and side-by-side technique for bilateral SEMS | N=24 19M: 5F Mean 63 years | Mixed (predominant CCA) | SEMS | Technical success was achieved in 100% of patients | 0% | NA |
| Lee, et al.[24], 2014 | Retrospective, single centre Korea | Comparison of outcomes between contrast and air cholangiography | N=47 28M: 19F Mean 69 years | Mixed (predominant CCA) | SEMS | Technical success was similar in both groups (air 87% vs contrast 87.5%). Cholangitis rates were lower in the air group (4.8% vs 29.2%) with similar 30-day mortality (air 8.3% vs contrast 8.7%) | 8.5% | NA |

| | | | | | | | | |
|-------------------------|--------------------------------------|------------------------------------------------------------------------|-----------------------------------------|----------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------|
| Sud, et al.[25], 2015 | Prospective RCT, single centre India | Comparison of outcomes between contrast and air cholangiography | N=49 27M: 22F Mean 57.1 years | Mixed (predominant gallbladder cancer) | SEMS | Technical success was similar in both groups (air 100% vs contrast 95.8%). Cholangitis rates were lower in the air group (16.6% vs 4%). | 0% | NA |
| Lee, et al.[26], 2017 | Prospective RCT, multi centre Korea | Comparison between unilateral and bilateral drainage | N=133 69M: 64F Mean 73.8 years | Mixed (predominant CCA) | SEMS | Technical success rates (bilateral 95.5% vs unilateral 100%) were similar but clinical success was higher in the bilateral group (95.3% vs 84.9%). Median stent patency duration was higher in the bilateral group (252 days vs 139 days). | 0% | NA |
| Lee, et al.[27], 2019 | Prospective RCT, multi centre Korea | Comparison between stent-in-stent and stent-by-stent placement of SEMS | N=69 36M: 33F Mean 73.5 years | Mixed (predominant CCA) | SEMS | Technical success (stent-in-stent 100% vs stent-by-stent 91.4%) and clinical success (stent-in-stent 94.1% vs stent-by-stent 90.6%) were similar. 6-month stent patency rates were similar (stent-in-stent 47.1% vs stent-by-stent 31.4%) | 0% | NA |
| Zhang, et al.[15], 2020 | Retrospective, single centre China | Comparison of contrast, air and carbon dioxide cholangiography | N=70 49M: 21F Mean 58.2 years | NA | Plastic | Cholangitis rates were higher in the contrast group (50%) compared to air (16.7%) and carbon dioxide (10%). There was no difference in 30-day mortality (contrast 18.2%, air 11.1%, carbon dioxide 3.3%) | 10% | Post-procedural cholangitis |

Supplementary table. studies reporting 30-day mortality following ERCP for inoperable and/or palliative MHBO.