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Objective assessment of trainee operative experience in a tertiary hepatobiliary unit

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Abstract

Introduction: Indicative numbers for completion of training (CCT) in the UK requires 35 upper Gastrointestinal/Hepatobiliary resections and 110 (50 non HPB trainees) cholecystectomies. We aim to identify whether the training experience in our centre meets the CCT requirements for hepatobiliary surgery and compare training opportunities to those in international fellowships.
Methods: We retrospectively reviewed our hospital's operating theatre database for all patients undergoing a liver or gallbladder resection between January 2008 and July 2015 using corresponding procedural codes and consultant name. The cohort was categorized based on case and primary operating surgeon. The training grade of the surgeon was split into junior registrar (ST3/5), senior registrar (ST6/8) and senior fellow (post-CCT).
Results: Over a 7.5 year period we performed 2301 hepatobiliary procedures. The senior fellows and senior registrars performed a median of 42 liver resections (range 15–94) and 77 (range 35–110) cholecystectomies as the primary operator in any given 12 month period. The academic output for the unit was 104 over this period, with a median publication rate of 1.34 papers/trainee in any given 12 months. 15/16 senior fellow/senior registrars went on to secure substantive hepatobiliary consultant posts.
Conclusions: Our centre delivers in excess of the required operative volume and clinical competencies for CCT in Hepatobiliary surgery in a 12 month period and exposure of trainees to operative experience is commensurate to the best performing international fellowships.

Keywords: Training; Liver surgery; Fellowship

Introduction

General surgery training has changed with the advent of the European working time directive.[1] A CCT confirms that a doctor has completed an approved training programme in the UK and is eligible for entry onto the GP Register or the Specialist Register. Currently, more than 50% of post-completion of certified training (CCT). general surgery trainees pursue fellowship training.[2,3] The recent move toward organ and disease-based training requires increasing anatomical site specific medical knowledge, and technical skills, especially so in hepato-pancreato-biliary (HPB) disease. While some HPB fellowships started in the 1990s, there was no mechanism for accreditation and the standards were not clearly set.

HPB trainees in the UK, are required to undertake 35 liver/pancreatic/biliary resections, in addition to 110 laparoscopic cholecystectomies over the course of their training to achieve a CCT in general surgery. This experience can be acquired by the trainee as primary surgeon with or without supervision. However, in the USA, the trainee must complete at least 100 major HPB cases, and the fellow must act as primary surgeon in 75 of those procedures to successfully complete an HPB fellowship, A minimum of 25 liver procedures is required, of which 15 must be major liver resections and a minimum of 20 complex biliary operations, which cannot include cholecystectomy.[1] By comparison, the American Society of Transplant Surgeons (ASTS)

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requires a fellow to complete a 24-month programme during which they must complete 45 liver and 15 pancreatic transplant procedures.[2]

These numbers are much higher than the numbers of procedures the UK Joint Committee on Higher Surgical Training (JCHST) and General Medical Council (GMC)[4] require trainees to complete during training. However, it is suspected that some trainees, especially those at high-volume centres, may easily exceed CCT requirements for complex HPB surgeries.

Training in HB surgery can be challenging due to the often complex and high risk nature of the procedures. However, direct exposure of trainees to such cases is essential for their progression. In our unit we have developed a model whereby appropriate cases are undertaken by trainees according to their experience, and always under the direct supervision of an experienced consultant HB surgeon.

The aim of this study was to analyse the training opportunities in HB surgery available within The Liverpool Hepatobiliary Centre.

Methods

Our institutional HB surgery operating theatre log archive was evaluated using procedural codes and consultant name over a 7.5-year period from January 2008–July 2015. Total numbers of cases were defined for liver (hepatectomy, segmentectomy and wedge resection biopsy) and biliary (common bile duct exploration, choledocho-enteric anastomosis and other major biliary procedures) surgeries. Data were examined for the median number of HB procedures undertaken by each trainee, fellow and consultant; the data were reported according to the training level, i.e. junior registrar (non HB trainee, Specialist Trainee ST3-5) or senior registrar (HB trainee ST6-8) or post CCT senior fellow. Finally, the distribution of operations in all these categories were compared across both levels and further compared with the requirements of the JSHCT and GMC.[4] Mann–Whitney test was used to compare the medians of average yearly totals of trainees for the 12 month periods. A *P*-value of <0.05 was considered to indicate statistical significance.

Results

During a 7.5 year period a total of 2301 hepatobiliary procedures were performed by 28 surgeons (4 consultants, 9 Senior Fellows, 7 ST6-8 [senior] Registrars, and 8 ST3-5 [junior] Registrars). The trainee timetable is shown in Fig. 1. The median (range) primary operator time spent in theatre by a trainee was 127 h (4–316) over any given 12 month placement.

Training in a multidisciplinary setting

Each week the trainees have access to three supra-regional multi-disciplinary meetings (MDT); which are the neuro-endocine; advanced colorectal cancer and primary liver tumour MDTs. Every year the service receives 1600 new referrals and undertakes 2500 MDT discussions. Each trainee will discuss an average of 833 cases per year through these MDT's.

Surgical activity by trainees

The senior fellows and senior registrars performed a median of 42 liver resections (range 15–94) and 77 (range 35–110) cholecystectomies as the primary operator in any given 12 month period. A junior (ST3-5) registrar could be expected to perform 34 cholecystectomies (range 20–110) in any given 12 month period.

Complex cases

During the study period the unit was evolving from radical anatomical operations for metastatic colorectal cancer to liver parenchymal sparing surgery, and so the number of major resections decreased commensurately.[5] Major cases were identified as left/right (+/-extended) hepatectomy, cholangiocarcinoma resection, excision/reconstruction of bile ducts. One quarter of the liver resections were defined as being major. Of these, senior fellows/senior registrars performed 97 major cases. There was no difference in the number of complex resections performed by senior fellow compared with senior registrars ($p = 0.4$).

Comparison with US fellowships on IHPBA

Twelve US programmes on the IHPBA website have complete data sets for 3 years of fellow case logs.[6,7] Table 1 is a summary of case volumes broken up by category. Additionally, the case volume requirements are listed for reference.

The median number of major and minor liver procedures performed in USA and our institution are similar ($p = 0.43$). The median number of biliary procedures performed in our centre was 11. This was comparatively lower than the USA figure of 26 ($p = 0.61$). The USA fellowships figures included all biliary procedures, including common bile duct explorations. However, we only included biliary procedures for malignancy.

Academic activity

The unit produced 104 academic publications (HZM, GJP, SWF, PG) of which 71 were co-authored by trainees/fellows in a wide variety of peer reviewed papers over the 7 year period. The unit produced a mean