

# Life Style Factors Associated With Ampullary Carcinomaabstract

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## Abstract

### Background

Ampullary neoplasms are a diverse group of tumours that arise in the ampulla of Vater, the most common of which is ampulla of Vater carcinoma (AVC), while other rare malignancies, such as neuroendocrine tumours, can occur in this location. Smoking has been extensively researched and is thought to be causally connected to a variety of malignancies. Alcohol has been linked to the development of numerous malignancies, including liver cancer. Respondents were interviewed in-person by trained interviewers using a structured questionnaire to obtain information on demographic characteristics, lifestyle behaviors, and medical histories. Based on the responses of the respondents the sample size was 56 from Coimbatore city. SPSS version 17 was used to carry on the statistical analysis for the study. In the current study, the social background showed that in the study majority of the respondents were female, between the age of 31 to 40 years, have been to under graduation employed in some field mainly as government employees they are from low income category at present they are consuming alcohol and are into smoking. Majority of the respondents are into consanguinity marriage. The health condition of the respondents showed that majority were having co-morbidity and facing mental health disorder. Detail on tumor showed that majority were suffering with tumor from past 6 month to 1 year belonging to stage I of tumor with less than 2cm size. Because of tumor the respondents highly face problem of weight loss, bleeding from rectum and jaundice.

Keywords: Ampulla of vater carcinoma, tumours, alchcohol, smokers, coimbatore, co-morbidity, consanguinity.

### Introduction

Ampullary neoplasms are a diverse group of tumours that arise in the ampulla of Vater, the most common of which is ampulla of Vater carcinoma (AVC), while other rare malignancies, such as neuroendocrine tumours, can occur in this location(Bosman et.al. 2010, Carter et.al. 2009 and Noë et.al. 2018). AVC accounts for 30% of pancreaticoduodenectomies and 20% of all tumor-related blockages of the common bile duct (Neoptolemos et.al. 1987, Benhamiche et.al. 2000 and Saavedra et.al. 2009). The ampulla of Vater region has particularly unusual histological features since it is a junction of three separate epithelia: intestinal, ductal pancreatic, and biliary. This type of structure distinguishes this region, with its distinct complexity and morphological heterogeneity. From a histological standpoint, AVCs have been classified into intestinal and pancreatobiliary subtypes depending on the epithelium of origin; in cases of coexistence of characteristics of both subtypes, the mixed category has been introduced for a more exact classification (Kimura et.al. 1994, Ang et.al. 2014, Chang et.al. 2013 and Yachida et.al. 2016).

Ampullary cancer is less aggressive and has a better prognosis after curative resection than distal bile duct or pancreatic cancer (Heinrich et.al. 2010, Qiao et.al. 2007 and Ruemmele et.al. 2009). The excellent prognosis is assumed to be attributable to the disease's early clinical manifestation with obstructive jaundice (Matsumoto et.al. 2000) and high resectability rate (Qiao

et.al. 2007). Despite a reasonably positive prognosis after resection, 32-44 percent of individuals experience a relapse, either locally or distantly. Ampullary adenoma can occur randomly or as part of a family history of familial adenomatous polyposis (Grobmyer et.al. 2008). Because of its ability to malignantly transform via the adenoma-carcinoma sequence, it is regarded a premalignant lesion leading to ampullary cancer. This sequence is largely accepted as valid for colorectal tumors (Cho 1992)

Smoking has been extensively researched and is thought to be causally connected to a variety of malignancies (IARC 2012). Because carcinogenic products, such as benzopyrene, are metabolised by hepatic microsomes and excreted to bile, smoking may cause cancer in the biliary tract epithelium, (Weber et.al. 1974) but the association with BTC or IHBDC risk in humans is inconclusive because epidemiological studies to date have been inconsistent and retrospective in design (Wenbin et.al. 2013 and WHO 2011) Alcohol has been linked to the development of numerous malignancies, including liver cancer. The relationship between alcohol use and IHBDC risk has been ambiguous since, while some earlier studies found positive relationships, they were primarily retrospective studies. The carcinogenic effect of alcohol on the biliary tract is debatable because an anti-carcinogenic effect generated by decreasing cholesterol metabolism, resulting in less gallstone formation, has been proposed.

#### **Objectives of the study:**

With this background the investigator has framed the following objectives to carry out the current study,

- To examine the social and demographic background of the respondents
- To find out the health condition of the sample group
- To understand the problems faced by the respondents due their health problem

#### **Review of Literature**

Ampulla of Vater is a peculiar anatomical structure, characterized by the crossroad of three distinct epithelia: Intestinal, ductal pancreatic and biliary. Adenocarcinomas arising in this area represent an opportunity to understand the comparative biology of all periampullary malignancies. These neoplasms can exhibit intestinal, pancreaticobiliary or mixed features, whereas the sub classification based on morphology and immunohistochemically features failed in demonstrating a robust prognostic reliability. In the last few years, the molecular landscape of this tumor entity has been uncovered, identifying alterations that may serve as prognostic and predictive biomarkers. In this review, the histological and genetic characteristics of ampullary carcinomas are discussed, taking into account the main clinical and therapeutic implications related to this tumor type as well (Pea et.al. 2018).

Smoking and alcohol are established risk factors for several types of cancer, but the effects on biliary cancers, comprising biliary tract cancer (BTC) and intrahepatic bile duct cancer (IHBDC), have been inconclusive. Makiuchi et.al. (2019) made a attempt in which total of 48,367 men and 54,776 women aged 40–69 years were enrolled from 1990 through 1994 and followed up for 846,417 person-years in men and 1,021,330 person-years in women until 2012, during which 246 BTC and 80 IHBDC male cases and 227 BTC and 60 IHBDC female cases were identified. In men, smoking was significantly

associated with an increased risk of IHBDC (HR 2.25; 95% CI, 1.19–4.25 for current smokers with  $\geq 30$  pack-years compared with non-smokers), and the risk was enhanced among regular drinkers compared with non/occasional-drinkers (HR 3.48; 95% CI, 1.41–8.61). A non-significant increase of IHBDC risk associated with alcohol was observed. Neither smoking nor alcohol consumption was associated with BTC risk. In women, the association of smoking and alcohol consumption with IHBDC and BTC was unclear because current smokers and regular drinkers were very few.

In study of McGee (2019) Over a period of 38, 369 156 person-years of follow-up, 1391 gallbladder, 758 intrahepatic bile duct, 1208 extrahepatic bile duct, and 623 ampulla of Vater cancer cases were identified. Ever, former, and current smoking were associated with increased extrahepatic bile duct and ampulla of Vater cancers risk (eg, current vs never smokers HR = 1.69, 95% CI = 1.34 to 2.13 and 2.22, 95% CI = 1.69 to 2.92, respectively), with dose-response effects for smoking pack-years, duration, and intensity (all  $P_{\text{trend}} < .01$ ). Current smoking and smoking intensity were also associated with intrahepatic bile duct cancer (eg,  $>40$  cigarettes per day vs never smokers HR = 2.15, 95 % CI = 1.15 to 4.00;  $P_{\text{trend}} = .001$ ). No convincing association was observed between smoking and gallbladder cancer. Alcohol consumption was only associated with intrahepatic bile duct cancer, with increased risk for individuals consuming five or more vs zero drinks per day (HR = 2.35, 95%CI = 1.46 to 3.78;  $P_{\text{trend}} = .04$ ). There was evidence of statistical heterogeneity among several cancer sites, particularly between gallbladder cancer and the other biliary tract cancers.

## Methodology

Respondents were interviewed in-person by trained interviewers who used a structured questionnaire to collect information on demographics, lifestyle practices, and medical histories. The sample size from Coimbatore city was 56 based on the responses of the respondents. The statistical analysis for the study was carried out using SPSS version 17.

## Findings of the study

### 1. Social Demographic background of the respondents

In the current research work the investigator has tried to examine the family history of the selected respondents for which the social demographic background was important. Result of the finding can be seen in table (1)

Table – 1

### Social and Demographic characteristics

S.No	Social and Demographic characteristics	Frequency	Percentage
<b>1</b>	<b>Age</b>		
	20 to 30yrs	13	23.21
	31 to 40yrs	20	35.71
	41 to 50yrs	11	19.64
	Above 50 yrs	12	21.43
<b>2</b>	<b>Gender</b>		
	Male	27	48.21

	Female	29	51.79
<b>3</b>	<b>Marital Status</b>		
	Married	31	55.36
	Un-married	6	10.71
	Widow	12	21.43
	Separated	7	12.50
<b>4</b>	<b>Education</b>		
	Schooling	8	14.29
	UG	21	37.50
	PG	9	16.07
	Others	18	32.14
<b>5</b>	<b>Occupation</b>		
	Private	18	32.14
	Government	20	35.71
	Self-Employed	18	32.14
<b>6</b>	<b>Socio-Economic Status</b>		
	Low	24	42.86
	Middle	22	39.29
	High	10	17.86
<b>7</b>	<b>Alcohol</b>		
	Current	9	16.07
	Never	32	57.14
	Former	15	26.79
<b>8</b>	<b>Smoking</b>		
	Current	8	14.29
	Never	36	64.29
	Former	12	21.43
<b>9</b>	<b>Diet</b>		
	Vegetarian	22	39.29
	Non-Vegetarian	33	58.93
<b>10</b>	<b>Consanguinity</b>		
	Yes	39	69.64
	No	17	30.36

The age wise distribution of the selected respondents showed that 35.71 percent were between the age of 31 to 40 years and 23.21 percent were between the age of 20 to 30 years regarding the gender of the respondents 51.79 percent were female and the information pertaining to the marital status showed that 53.36 percent were married. The education of the respondents showed that 37.50 percent have attained under graduate education and 32.14 percent have attained other kind of education like illiterate, diploma etc. Information on the occupation of the respondents showed that 35.71 percent were government employees and 32.14 percent were self employed. The socio-economic status of the respondents showed that 42.86 percent were from low

income background. Details regarding consumption of alcohol showed that 57.14 percent never consumed alcohol whereas 26.79 percent were former drinkers in case of smoking 64.29 percent never smoked and 21.43 percent were former smokers. Detail on the diet pattern of the respondents showed that 58.93 percent were non vegetarian. Information on consanguinity of the respondents showed that 69.64 percent reported yes.

The health condition of the respondents was examined and the result can be seen in table (2).

**Table – 2**

**Health Condition of Respondents**

S.No	Social and Demographic characteristics	Frequency	Percentage
<b>1</b>	<b>Comorbidity</b>		
	Yes	39	69.64
	No	17	30.36
<b>2</b>	<b>Symptoms of Comorbidity</b>		
	Substance Use Disorder	16	28.57
	Mental Health Disorder/ Symptoms	23	41.07
	NA	17	30.36
<b>3</b>	<b>Duration of Tumor</b>		
	Less than 6 months	12	21.43
	6 months – 1 years	19	33.93
	1 years – 2 years	18	32.14
	More than 2 years	7	12.50
<b>4</b>	<b>Stage of Tumor</b>		
	Stage I	23	41.07
	Stage II	19	33.93
	Stage III	14	25.00
<b>5</b>	<b>Size of Tumor</b>		
	Less than 2	36	64.29
	More than 2	20	35.71

About 69.64 percent were facing co-morbidity problem and the symptoms showed that 41.07 percent faced mental health disorder and 28.57 percent faced substance use disorder. The duration of tumor among the respondents showed that 33.93 percent are suffering from past 6 months to 1 year of period followed by 32.14 percent between the periods of 1 year to 2 year. Among the sample group 41.07 percent are in stage 1 of tumor, 33.93 percent are in stage II and 25 percent are in stage 3. Detail on size of tumor showed that 64.29 percent had tumor below 2cm and 35.71 percent had tumor more than 2cm.

The problems faced by the respondents due to their health condition was examined based on the average attained score was assigned and for highest score rank 1 was assigned and other ranks was allotted simultaneously.

**Table – 3**

### Problems Faced by Respondents

S.No	Social and Demographic characteristics	Rank
1	Jaundice	3
2	Clay-Colored Stools	7
3	Abdominal Pain	4
4	Fever	8
5	Bleeding from the rectum	2
6	Nausea	6
7	Vomiting	5
8	Weight Loss	1

Rank 1 was given to the problem weight loss, with effect of tumor the respondent has witnessed severe weight loss in their body which made them feel tired and sick. Rank 2 was assigned to the problem bleeding from the rectum which was again a major concern due to their tumor. Rank 3 was assigned to Jaundice, because of tumor and medication they are affected with jaundice which turned their skin tone and eye color to yellowish color. Rank 4 was assigned to abdominal pain followed by other problems like vomiting, nausea and clay colored stools.

### Conclusion

Ampullary cancer is less aggressive and has a better prognosis after curative resection than distal bile duct or pancreatic cancer. In the current study, the social background showed that in the study majority of the respondents were female, between the age of 31 to 40 years, have been to under graduation employed in some field mainly as government employees they are from low income category at present they are consuming alcohol and are into smoking. Majority of the respondents are into consanguinity marriage. The health condition of the respondents showed that majority were having co-morbidity and facing mental health disorder. Detail on tumor showed that majority were suffering with tumor from past 6 month to 1 year belonging to stage I of tumor with less than 2cm size. Because of tumor the respondents highly face problem of weight loss, bleeding from rectum and jaundice.

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